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ON FOOT THROUGH CENTRAL JAPAN.

HAVING had several opportunities of seeing the Treaty Ports of Japan, and of visiting Tokio or, as it is more commonly called by foreigners, Yedo, the capital of that country, my curiosity and interest were in some degree aroused, and I began to feel a wish to see something of the interior of that empire which had so long been as a sealed book to western nations. There is still some romance connected with this "Land of the Rising Sun," as the Japanese proudly call it, and I felt that in seeing only those parts of the country where foreigners are allowed to live, usually known as the Treaty Ports, I, in reality, saw nothing of the Japanese as they are. I also felt that, in the interior of the country, one might yet see something of that wonderful development of civilisation which is far older than, and in its way as perfect, as our own. This civilisation, however, seems likely to give way—in fact, is now actually giving way—before the more recent and more vigorous development of that of western nations. Japan may be said to be becoming Europeanised, as it were, and the habits and customs of Europe and America are making rapid changes in the capital and in the ports open to foreigners. Hence, to see old Japan it was necessary to travel well into the interior of the country, and having secured a companion of like views with myself in Mr. Arthur Barry, R.N.,* I resolved to do so.

My first idea was to start from Kobé, one of the Treaty Ports, and travel overland through Osaka and Kioto to Tokio, by the Tokido, the great highway of Japan, but I afterwards heard of the Nakasenda, a road leading through the mountain districts of Central Japan.

Thinking that the latter would be the more interesting and least-frequented route, I determined to take it in preference to the Tokido. This road also leads from Kioto to Tokio, is a longer and more difficult journey, but possesses the charm of being almost untravelled by foreigners.

Through the kind offices of Sir Harry Parkes, K.C.B.—the British Envoy and Minister at Yedo—I obtained passes, for my friend and myself, from the Japanese government. I also called on Mr. Vickers Boyle, C.S.I.—the engineer-in-chief of the Japanese Government—who very kindly gave me much information about my route, including a list of the chief towns along the road, which I found very useful.

We secured the services of a Japanese attendant named Roquohai—that is, the sixth Hai—who spoke a few words of English, and who proved of great use to us in our travels. This man had been a Yakonin—an officer—in the army of one of the Daimios, or feudal lords, before the late civil war, which broke the power of the Daimios, and brought the whole country under the direct government of the Mikado and his ministers at Yedo.

With the intention of travelling rapidly, as unfortunately we were rather pressed for time, we reduced our luggage to a load easily carried by one coolie, and acting on the old backwoodsman's saying, "If you have leisure for your journey, ride; if you are in a hurry, walk;" we determined to trust to our legs more than to any other means of conveyance. I kept a journal of my observations and daily doings during the journey, which I now offer to the public, not in any way as a literary effort, but simply as some account of a hurried journey through a country very little known to Europeans. This I thought might be of interest to those who prefer to travel out of the beaten tracks (as all real travellers do); and while I feel that I ought to apologise for the scantiness of my observations, I can only point to the rapidity of the journey as my excuse.

Wednesday, May 24th, 1876.—From Kobé we took the train to Osaka. This being one of the largest towns in Japan, we spent a few hours in looking round it. In the evening we took a compartment in one of the native passenger-boats going up the river to Fushimi, resolving to take the best night's rest we could under the circumstances. That, however, turned out to be a very indifferent one, as we were poled up the river; the noise made by the boat coolies as they ran shouting (according to the habit of Orientals when at work) from the bows aft, pushing with their poles, made sleep impossible. At times, however, we got some respite when they landed to tow.

Thursday, 25th.—We arrived at Fushimi about 7 a.m., and having made as much of a toilet as circumstances permitted, got some breakfast at a tea-house and walked in to Kioto, a distance of about eight miles. On our way we turned aside to a temple in which is a big wooden Dybuts, an image of Buddha, of great size but no artistic design. In the same temple is a monster bell, very beautifully made.

Kioto is the ancient capital, and, before the revolution, was the residence of the Mikado. We spent some hours there, and went to see the exhibition of Japanese works of art which happened to be going on

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at the time. It was held in the old palace of the Mikado, which covered a large extent of ground, and was surrounded by well-kept gardens.

About 4.30 p.m. we started on our journey along the Nakasenda, and, after walking about two hours, arrived at Otsu, a large town, where we put up for the night. The road was much cut up by the bullock carts, but improved a little as we went on. After passing between some low hills it opened out on Otsu, and we caught sight of Lake Biwa. We found lodgings close to the lake, nearly a mile off the road.

Friday, 26th.—We left Otsu early and pushed on along a rough but level road through Kusatsu, where the Tokaido branches off to the right. The town consists of nothing but shops for the sale of gourds, riding whips, walking sticks and paper waterproofs. We now left Lake Biwa and went on through Moriyama to Musa, our road skirting the plain with rising ground on the right. At Musa we made our midday halt, and then walked on through Echigawa to Takamiya where we stopped for the night. We were now well up the plains, with a road, good for Japan, passing through a highly cultivated country, which, but for the ever-present bamboo, might have passed for the south of England.

Saturday, 27th.—Leaving Takamiya, we walked on through Torümoto, where we again caught sight of Lake Biwa, and then passed off the plain, up a pass over the hills to the right. This pass is called the Surihara Tôgé, and though not high is steep. At the top is a tea-house, where we rested for a few minutes and had a last look at Lake Biwa, of which the Japanese are so proud. The lake takes its name from a supposed resemblance, in form, to the "biwa" or native guitar, and is said by tradition to have been formed at the time that Fujiyama reared its huge cone, and when Japan was rent and changed by terrific earthquakes. From this our road wound down the pass, through low hills, passing Bamba and Samégai to Kishiwabara, where we halted for lunch, and then pushed on through Tmasu, Sekigahara and Tarni to Akasaka, where we stayed the night.

Just beyond Tarni a fair road branched off to the right, which we were informed led into the Tokaido. Soon after, on the left, we passed a remarkable looking old tomb, but I could get no more information about it than that it was very old. Our Japanese attendant told us that the first of the Shoguns (or Tycoons) who attained great political power, fought the last of seventy-five successful battles at Akasaka. He had begun life as a petty Daimio, and achieved greatness by his military powers, and in this battle had completely defeated the great Daimio who had been his chief opponent.

Our afternoon's walk brought us well on to the great plain of Mino: like the plains around Kioto it was fertile and well-cultivated. Many of the houses had pleasant looking inclosures round them, instead of being open, as is often the case in Japan. The number of horses used by the inhabitants increased, and though by no means well-bred looking animals, they appeared to be larger and stronger than those I had hitherto seen in the country. A considerable branch of industry was the carving of ornaments and trays for Indian ink, out of the many coloured marbles and carnelians which are found in the neighbouring hills.

Sunday, 28th.—Leaving Akasaka in the morning, we crossed the Hokogawa River by ferry, and then on through Miégi and Gôdo, across the Godogawa River by ferry and on to Kanô, where we made our midday halt. I now began to notice a custom of the Japanese which is exceedingly perplexing to the inquiring traveller. It is that a river rarely bears the same name for more than 2 or 3 miles of its course, generally taking that of the nearest town or village.

The road along the plain still continued good except across the watercourses. A remarkable feature of these watercourses was that the beds of some of them were positively higher than the land they passed over. This seemed to be caused by the amount of deposit which the rains bring down from the hills, with such force and in such quantities that, though the rush of water keeps the middle of the course comparatively clear, the deposit at the sides is so great that it forms a natural bank which confines the torrent to its bed. Whether this was entirely due to nature, or had been originated by small artificial embankments, and the work completed by the natural rush of the torrents, I was unable to discover. Kanô seemed to be an important centre of silk spinning and weaving, and the people appeared to make large quantities of umbrellas. In this neighbourhood also they weave a fabric of silk, into which they introduce the web of what they told me was (if I understood aright) a sort of wild silkworm; forming of it designs of various patterns. The material is then dyed, but as the silk of the wild worm will not take dye, that part of the design remains white.

From Kanô we walked on though Shinkanô to Unuma, where we stopped to change our coolie, and as it had begun to rain hard we had some difficulty in getting one; we succeeded, however, and then pushed our way on to Ota, where we arrived after dark, and halted for the night.

The road as far as Unuma was very good, in some parts passing through a regular avenue of trees; the plain up which it ran gradually ascending, and becoming less highly cultivated. Beyond Unuma the road was rough and stony; it passed over a couple of steep hills and then down into a fine wild glen, with the Kisogawa flowing at the bottom. In places, the road encroached almost on the river's bed, so that in flood-times it would soon be rendered impassable. Here we first began to get a glimpse of the wild mountain scenery.

Monday, 29th.—In the morning we proceeded up the valley of the Kisogawa, which we crossed by ferry to Imawatashi, soon after clearing Ota. We then left the river and proceeded through Fushimi and Mitaké, and over the Jupongé Tôgé, an easy pass, near the top of which is a wayside tea-house, where we halted for lunch, and then went on through Hosokuté, after which we passed over a series of ascents and descents, the last of which is called the Jin San Tôgé, to Okuté, where we passed the night. Hereabouts many of the houses were roofed with loose flat pieces of wood kept down by large stones, giving them much the appearance of Swiss houses; some, also, were thatched. These peculiarities of roofing we soon noticed were general all through the mountains. The winter snows, I was informed, were so heavy as to break the tiles usually used for roofing in Japan.

Tuesday, 30th.—Leaving Okuté, our road wound

over a series of hills, from the tops of which we were confronted by ranges of snow-clad mountains, to a cultivated valley, in the middle of which is Oi, through which town we passed, and then traversing more hills, another valley and hills again, came into the valley of the Nakatsugawa. We halted at the town to get some tiffin, and then pushed on over a rough pass called the Nakatsugawa Tôgé, down through a valley, in which is a mean-looking town called Ochai, and up along a hilly road to Magomé, which is built on a steep incline near the top of the mountain. We then passed over the mountain, down the head of a gorge and up again over the Magomé Tôgé, a considerable pass, whence we looked into a magnificant glen, along which our road went to Tsumago.

We had had rain during the afternoon, but had pushed on, and it was quite dark when we arrived. On our road down the pass we were much concerned about our attendant, who had gone lame, and had very foolishly parted with the horse we had hired for him, and attempted to follow us on foot. Luckily we met a former acquaintance of his, travelling in a kango in the same direction as ourselves, who very kindly let him get into his kango, and walked on with us. A kango is a sort of seat slung on a bamboo or pole, and carried by coolies. We found our new acquaintance rather amusing, he being a trifle under the influence of saki, a kind of spirit made from rice. He turned out to be an innkeeper at Tsumago, so we put up at his inn for the night.

Since crossing the Majomé Tôgé the scenery had become very wild and picturesque; the road at times positively overhanging the stream on our left, with the mountains rising abruptly on our right. About half way down the glen we saw the effects of a huge landslip, which appeared to have recently fallen, and had in some degree changed the course of the river.

Wednesday, 31*st*.—The morning's walk took us over a hill and up a deep glen, at the bottom of which flowed a rapid stream. The road was rough, and led through Mitano, Nojiri and Suwara, all but poor towns, at the last of which we made our midday halt.

In the course of the morning we came across a *troupe* of itinerant mountebanks and jugglers, who appeared to be heartily welcomed by the country people. Some of the juggling was clever, as it always is in Japan, and the mumming appeared to amuse the people, but, of course, was lost on us, from our ignorance of the language.

In the afternoon we proceeded up the glen, by a hilly road, and crossing the stream arrived at Agématsu (where we put up for the night) about an hour after dark.

The country had now become thinly populated and thickly wooded.

Thursday, *June* 1*st*.—Starting from Agématsu in the morning, we went on through Fukushima, a good-sized town, and Yajohara, also a town of some size, where we rested and lunched. The road continued up the glen, which was thickly wooded and very pretty, still keeing near the stream, which it crossed several times. We saw a good many men fishing with rod and line; they use horsehair for line, the rods are generally of bamboo, and they use a single artificial fly, made much as we make them, only rather roughly constructed. There are numbers of small trout in the streams which appear to take the fly readily.

In some of the towns, about this part of our journey, we saw exposed for sale the skins of the black bear, a sort of long-haired gray antelope or deer, fox and falcon. In this neighbourhood they breed horses in large numbers.

In the afternoon we continued our journey up a ravine to the right, and over a pass called the Torü Tôgé. At the top of the pass is a temple, through the entrance of which the road passes, and from which, I presume, it takes its name. "Torü" being the Japanese word for that peculiar gateway, consisting of two upright posts and a transverse beam, which is the emblem of the Shinto sect; and "tôgé" meaning pass. From here we had a fine view both of the latter part of the glen we had left and of that along which the next few miles of our road lay.

I had noticed, on leaving the plains, a change for the better in the features of the inhabitants. The mouth was better formed and the face more oval than is usual with the Japanese. But on continuing our journey, through Narai and Niégawa, they appeared to deteriorate again; the facial angle became smaller and the expression more monkeyish. These people were chiefly woodcutters and charcoal burners, and they seemed to live in a state of greater squalor than I have elsewhere seen in Japan, except in the island of Jesso. The inhabitants of the glens appeared to do a good deal of hand-loom weaving, chiefly in cotton, but occasionally in silk. The houses hereabouts were more strongly built than usual, and some had large wooden shutters to put up round the more exposed parts of the house.

We stayed the night at Niégawa at a very good inn, and in the course of the evening the head man of the village came to see us, and requested to inspect our passports, which seemed rather to puzzle him. I gave him a cigar, which I had to show him how to light; he smoked a little of it and then carefully put the rest away. I also gave him some gin, of which he drank a little, and said he would keep the rest for his friends to taste. He then went away, but soon appeared again with two other men, and requested to be allowed to copy our passports, which he did. I entered into conversation with him through our attendant. He asked a good many intelligent questions about the manners and customs of the English. What was the name of our capital? Was it bigger than Tokio? Was it true we were ruled by a woman? He said he had heard we had large possessions in many parts of the world, and seemed to think that the only means of acquiring such possessions was by absolute conquest; of colonisation he appeared to have no idea. I gave him some English tobacco, which he smoked out of his own pipe, but being struck by the size of my pipe, which certainly looked enormous in comparison with the tiny articles they use, he asked for it. Thinking he only wanted to look at it, I let him have it, Rather to my disgust, he filled it and began to smoke; he did not appear to like it much, and soon put it down. Meanwhile our lower room had become half filled with Japanese. It seemed as if everybody who could frame any excuse to come into the hotel did so for the sake of having a look at us. I must say, however, that they were very well behaved, and none of them made any attempt to enter the inner room.

Since we had left the plains we had begun to attract

more and more attention as we went on, and here it certainly appeared to culminate. Absurd as it may seem, it is a fact that the dogs ran away howling with fear when they saw us. The chief man was almost the only one who spoke directly to me, and even he remained in the lower room. We began, however, to get rather tired of them; I thought they would never go, so at last, assuming (according to oriental ideas) the position of a superior, I rose and turned away, as a sign that the audience was finished. Then, after a great deal of bowing and rubbing of foreheads, they all departed. The head man was quite a young man, and rather good-looking. The position these men occupy is not exactly that of a magistrate; they seem to have no power to punish, but they are responsible for all that happens in their districts, and make reports to Tokio. They are generally taken from the largest landowners in the neighbourhood.

Friday, 2nd.—We made rather a late start, having both overslept ourselves, but pushed on through Motoyama and Seba, both poor-looking towns. The road leading down the glen, which gradually opened out into a wide valley, and beyond Seba became a well-cultivated plain, along the right of which the road wound to Shiwojiri, a fair-sized town, where we stopped for lunch.

All through these valleys we noticed the great ingenuity displayed by the inhabitants in making use of the water-power from the numerous streams and rivulets, to turn mills of every imaginable construction for pounding and grinding grain. Small water-mills also seemed a favourite toy with the children. After leaving Shiwojiri, we started up the mountains on the right and over the Shiwojiri Tôgé. From the top of this high pass we had a really magnificent view of the valley of Suwa, with the lake in the middle, its shores studded with villages, and the whole surrounded by high mountains, some capped with snow. We made our way down the pass and across the valley, with the lake on our right, to Shima-no-Suwa, quite a large town, close to the lake, where we halted for the night. At this place there are natural hot springs, and bathing is carried on everywhere in the most promiscuous manner. The bath at the hotel was fed from a hot spring; it was in rather a public place, and, in spite of the screens we had put up, the children and even men and women came in large numbers to see us bathe. The baths here are believed by the Japanese to have great medicinal properties.

Saturday, 3rd.—Leaving Shima-no-Suwa, and getting the lake in our rear, we proceeded up a ravine, and, by a toilsome ascent up a steep and rocky road, made our way up the Wada Tôgé. About 1½ mile from the top are some tea-houses, at one of which we rested for a few minutes, and then pushed on to the top, the road getting worse and worse, till it almost ceased to be a road at all. When we reached the top, however, we had the wildest and grandest view we encountered in our journey. In our rear were the mountains we had traversed, range beyond range. In front we looked down on a valley with high mountains on every side, and rising above them, right in front, was Asama Yama, an active volcano, with its top half obscured by its own smoke. The view here, though perhaps more wild and magnificent, was not so pretty as that from the Shiwojiri Tôgé; it lacked the relief to the eye given in the latter case by looking down from the wild mountain scenery to the peaceful looking valley and lake of Suwa. We had now got to the summit of the highest and most difficult of the many passes we encountered in our journey. All up the pass are joss stones and idols, from which I presume it is held sacred. This was the case with all the mountain-passes, but in that of Wada was more marked than usual. We found the road down considerably less steep and rough than that up; it led down a ravine, which opened out on a large valley, in which was the town of Wada, where we made our midday halt. I now began to fancy that the appearance of the inhabitants improved again, they looked less squalid than those of some of the high valleys we had lately passed through.

In the afternoon we proceeded along the valley through Nagakuba and over Kasatore Tôgé. The road was fair and the view from the top of the pass was fine, but we lost the best of it, as it was just getting dark and rather misty. It was quite dark when we arrived at Ashita, where we put up for the night. We now found ourselves on a large elevated plateau to which we had gradually risen, the valleys becoming more elevated as we crossed each successive range of mountains.

Sunday, 4th.—It rained hard all the early part of the morning but cleared up towards midday, and we made a start, our road winding through a hilly district, fairly cultivated and wooded, and gradually rising. We passed through Mochidzuki and Yawata, after which the country became more level, and we crossed the Kukuman-gawa by a bridge of boats, and then walked on through Twamatura, a good-sized town, along a very good road to Otai, where we made a short halt, and then pushed up a gradual but continual ascent to Oiwaké. The latter part of our road was covered with cinders and lumps of lava, from some old eruption of Asama Yama, along the base of which the road lay. Oiwaké is a town of considerable size, and from here it seemed feasible to ascend the mountain, so we resolved to stay the night, make inquiries, and, if possible, try the ascent early next morning. The Japanese hold all volcanoes sacred, and are in the habit of making pilgrimages up them, so there was no difficulty in getting a guide.

Near the town we saw the commencement of a very pretentious-looking road up the mountain; it had only, however, proceeded a few yards as yet. While we were at dinner an old Buddhist priest visited us, to ask us to subscribe towards the making of this road, which was being built to make the pilgrimages more easy. Our attendant, before informing us what the old man wanted, told him we were at dinner, and he went away saying he would call again. When a Japanese priest wishes to raise subscriptions for any purpose similar to the above mentioned, he erects a little booth at the roadside and begs from passers-by; and each donor of even a few cash has then the pleasure of seeing his name put on a little wooden tally, and hung up to one of the posts placed for the purpose along the road.

Monday, 5th.—We rose at daybreak and started up the mountain. It took us nearly four hours continuous climbing to get to the top, and the latter part of the ascent we had to accomplish on our hands and knees in the cinders. The mountain was quiet, a

thick white vapour rising from two craters. There were several joss stones at the top, and our guide went through a small religious ceremony of his own when he got up to the crater. The view was very fine—mountains, nothing but mountains, on every side rising range beyond range, except in the direction of the Usui Tôgé, over which, in the hazy distance, we could see the plains of Tokio. The valleys in the immediate neighbourhood were more or less covered with cinders, and looked desolate in the extreme in comparison with the fresh-looking valleys we had generally met with in our journey. Far away to the southward we saw the huge cone of Fujiyama, reared above the other mountains, covered with snow and glittering in the sunlight. We found it very cold, however; a bitter wind and snow on the ground soon made us think of the descent, which we found nearly as difficult as the ascent, though, of course, we accomplished it much more rapidly. We got back to Oiwaké soon after midday. The distance from the town to the top, I was informed, was about 3 ris, or 7½ miles. Oiwaké is about 3000 ft. above the level of the sea, and I suppose the top of Asama is some 4000 ft. above that. When we got back we found that the old priest had called again about money for his road, and had left a message, asking us, if we subscribed anything, to leave it at the hotel for him, so we left a small donation. In the afternoon we continued our journey, the road still leading along the base of the mountain as far as Kutsukaké, and then through Kuruisawa over the Usui Tôgé. Just before getting to the pass, on the right, we saw some very remarkable-looking rocks standing out of the mountain-side, and at a little distance bearing a most striking resemblance to the ruins of the nave of a large church.

Oiwaké and Kutsukaké are said to be the coldest towns in Japan. No grain was grown in the neighbourhood; I was told it would not ripen. The crops are chiefly pulse. All through the mountains, the valleys were fairly wooded, the woods consisting chiefly of fir trees, some of them of very large size, but in this neighbourhood they were more stunted. The road up the Usui Tôgé, though a considerably steep ascent, was by no means bad. At the top was a large temple, from which we looked down on the series of broken hills by which the central mountains gradually merge into the plains of Tokio. The road down the pass was in some places very bad; we got to Sakamoto, and there, being overtaken by night, we put up. Just before reaching this town we got a perfect bird's-eye view of it from the top of a hill. It was quite a quaint sight; the streets were very regular, running parallel with, and at right angles to, the main road, and the town itself formed almost a perfect oblong.

Tuesday, 6th.—In the morning we continued our journey, the road still passing through a hilly country, though the hills gradually decreased in height as we got further from the mountains. Near Sakamoto, on the right, we passed some high pinnacles of rock; they were covered in foliage to the tops, and in consequence had a very striking appearance. Our road passed through Matsuida, and then down into the plain, through Annaka, near which it was lined in many parts with magnificant avenues of cedar, through Itabana and Takasaki. At the latter place we made our midday halt, and then pushed on through Kuragano and Shimmachi to Hongô, where we arrived about two hours after sunset, and put up for the night. The size and importance of the towns we passed through markedly increased as we got further down the plain.

Wednesday, 7th.—It had rained hard all night and continued to do so till about an hour before noon, when it in some degree abated, and we started. The rain soon began to pour down again as hard as ever, but we pushed on, finding the roads in a fearful state, through Fukaya and Kumagaë to Konosu, where we halted for the night.

Thursday, 8th.—Getting early on our road, we walked through Okégawa, Agéo, Omiya, Urawa, Warabi and Itabashi to Tokio. At Omiya is a great Shinto shrine, and beyond Urawa is rather a fine temple to the moon. In Japan, a temple to the moon may generally be known by the pictures and sculptures of hares with which it is sure to abound; that animal being considered sacred to the moon, and, if I understood aright, is supposed to reside there. At Itabashi we saw a very old enski tree covered with religious offerings, chiefly in the form of pictures, generally of a man and woman with their backs turned to one another. After some little trouble, I contrived to elicit from bystanders that this tree is supposed to be invested with supernatural powers, and has acquired a great reputation for love-philters. I was told that, if a girl was betrothed by her parents to a man she did not like, a decoction of the wood was given her to drink, and the result was that her hatred was turned into love. Also that, if a man got tired of his mistress, she would give him a decoction of it with equally beneficial results; and to judge by the number of votive offerings, these results must have been most efficacious.

We reached Tokio early in the afternoon, having taken fourteen days, with a few hours to spare, to walk from Kioto to Tokio. According to the Japanese measurement, which is generally pretty correct, the total distance is about 136 ris, to this may be added about 6 ris for the ascent of Asama Yama, making a total distance of 142 ris. The ri is 2½ English miles. This makes our average day's walk about 25½ miles. We crossed six passes over 3000 feet high, and passed over five separate ranges of mountains.

This route is called the Nakasenda, or Road of the Middle Mountains, in contradistinction to the usual road between Kioto and Tokio, which is called the Tôkaidô, or Road of the Eastern Sea, and to the other great highway of Japan called the Hokurokudô, or Road of the Northern Land. I was informed that the road was originally opened more than 1100 years ago. It is throughout fairly solid, but generally very rough, and in many parts utterly impassable for any wheeled conveyance. From Kioto, for about 36 ris, as far as Unuma, ginrickshas are in general use, as is also the case from Sakamoto to Tokio, the last 35 ris of the journey. They are also to be obtained for short distances in some of the larger valleys. The ginricksha (literally man-power carriage) is a recent invention, introduced by foreigners. It is a very small two-wheeled conveyance, for one or two persons, dragged by one or more coolies, and is now in general use in the level parts of the country. Before its introduction, kangos and horses were the only means of conveyance. There are various kinds

of kangos, but they consist merely of a seat for one person slung to a pole and carried by coolies. Those used by the Daimios were often very nicely got up, and somewhat resembled in shape the conventional Noah's ark of our childhood, with the pole fastened along the apex of the roof. These were carried by six or eight coolies. Kangos can still be occasionally obtained in the mountain districts, but they are a most uncomfortable seat for a European, as the occupant has nowhere to put his feet. Horses can generally be obtained in the mountains, but usually only with the common pack-saddle of the country. Coolies can be obtained throughout the route, and regular coolie-agencies are established in all the larger villages. The Nakasenda begins in the province of Yamashiro, and passes through Omi, Mino, Shinano and Kodzuki, and ends in Musashi. All the highest passes are in Shinano, and the whole of this province is probably at an average height of 25,000 feet above the level of the sea, and in it is all the finest scenery.

We found accommodation, never so very bad, in all the villages of any size, and the Japanese hotels are as good (according to Japanese ideas of comfort) as those in any other country. The rooms are clean, and a warm bath is always to be obtained. The natives sleep rolled in padded quilts of cotton, and from these a fairly comfortable European bed can be easily extemporised, by spreading one for a mattress, rolling up another for a pillow, and using a third as a coverlet. We always found the people at the inns civil and attentive in the extreme. During the whole of our journey of fourteen days, from Kioto to Tokio, we lived on Japanese food, with the exception of four small pots of Liebig's extract of beef, and some spirits and tobacco. Eggs and rice are always to be obtained, and occasionally fish, with other dishes, the origin of which the European traveller would do well not to ask. If accepted on trust, some of them are by no means bad.

The Japanese appear to travel a great deal about their own country, and to shift their residences frequently. Native guide-books and itineraries are to be obtained along all the roads of any importance. They usually give the distances between the towns and villages, and a list of the best inns at each place. On leaving an inn, it is the custom, in some parts of the country, for the landlord to ask you where you intend to stop the next night, and he will then give you an introduction to some innkeeper at the place you mention, with whom he presumably has some understanding. These introductions are often useful, if one arrives at an out-of-the-way place late at night, in which case the traveller might be looked on with suspicion. Sometimes, too, the inns may be crowded, and then the bearer of an introduction will find the landlord inclined to make more than usual efforts to accommodate him. In the hill-country the rooms were usually in sets of three, one behind the other, rising in steps, the highest being furthest from the road. These inns had chiefly been built to accommodate the trains of the Daimios in their progresses to the capital. The "Yakonins," or officers, occupied the highest rooms; their "Samauri," or soldiers, the next, and the coolies and servants the lowest. The highest rooms still appear to be kept for the more distinguished guests. As we carried papers stating that we were English officers—Yakonins the country people called us—we were always shown into the highest rooms, and in some cases it even appeared as if the landlord turned guests whom he considered of inferior social rank into lower rooms to accommodate us. Nearer the large towns, however, they appeared to have grown much more republican in their ideas, and no distinction appeared to be made.

The landlady will often wait on those whom she considers important guests in person. This, however, is but a doubtful advantage, for it usually means that your viands, &c., are handed to you by a creature with black teeth and shaven eyebrows (according to the hideous custom of married women in Japan), instead of a trim little "musumie" (*i.e.*, girl), with pearly teeth and laughing black eyes, who watches you all the time with mingled astonishment and curiosity.

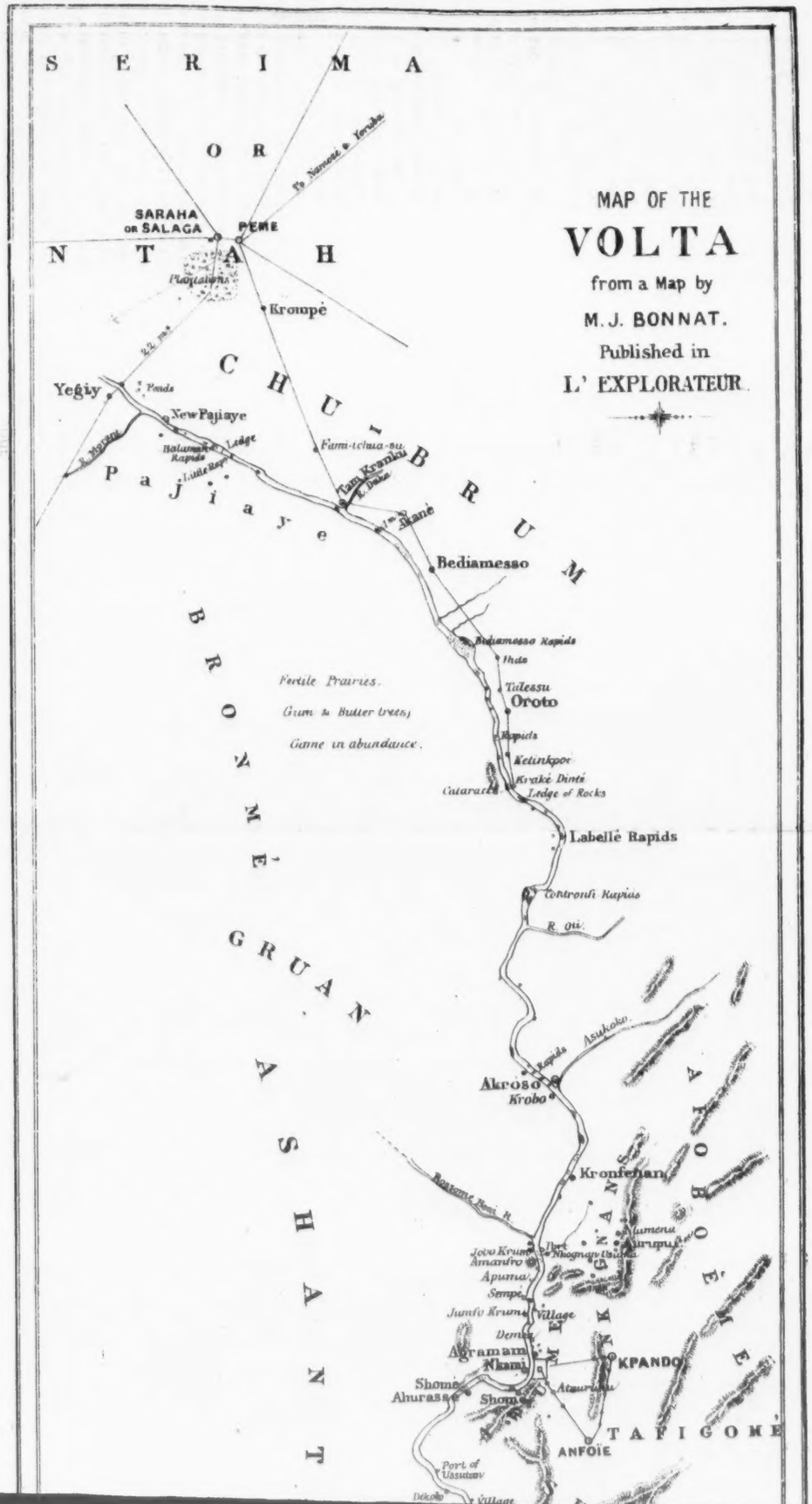
On the whole one may travel in Japan with comparative comfort, and without encountering the filth and squalor which those who leave the beaten tracks of Europeans generally meet with in the far East. If the traveller makes up his mind to rough it and cast aside European habits, and adopt those of the natives, he will travel with economy and speed. To some men, however, this would be simple misery, and such a one must make up his mind to carry the impedimenta of occidental civilisation with him. His progress, however, would be slow, and each additional coolie he found it necessary to employ would be a new cause of delay.

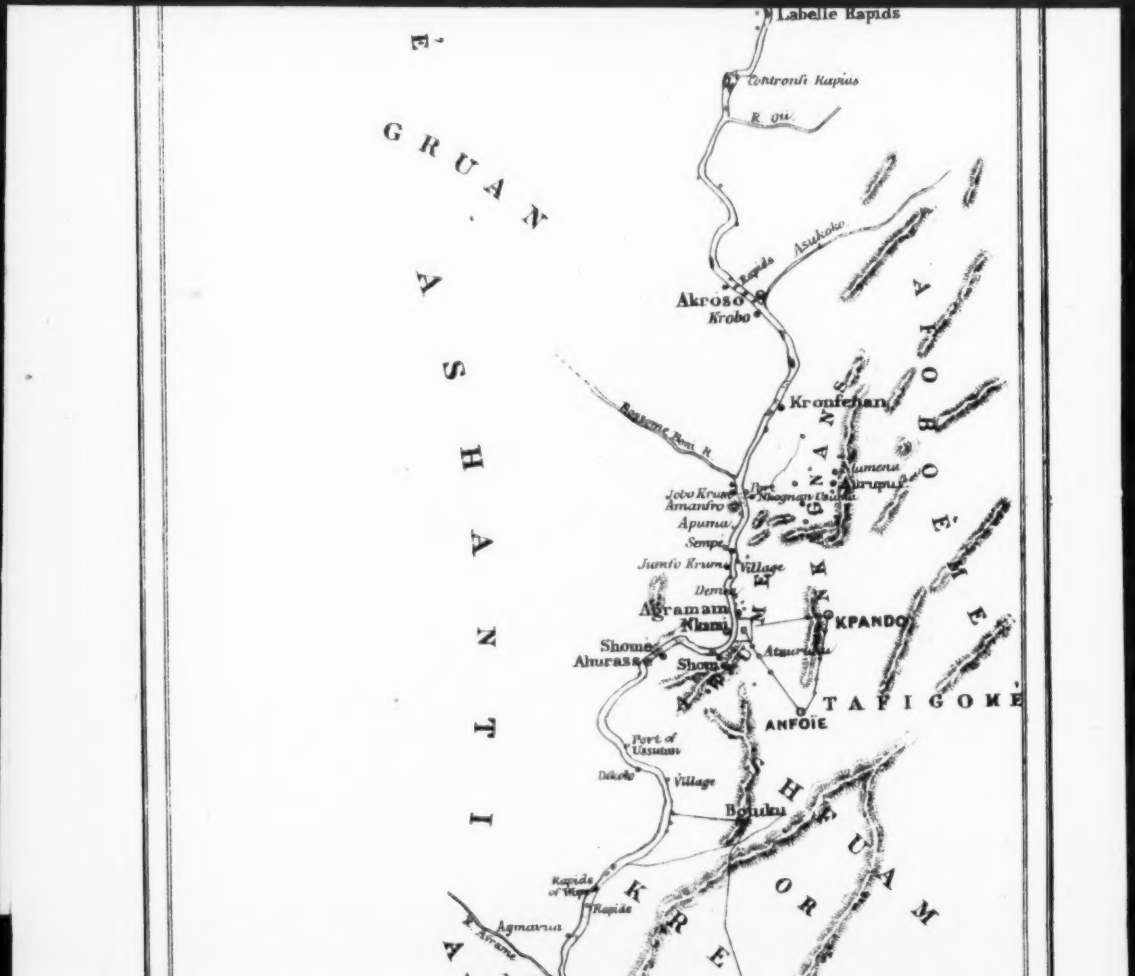
EDW. RAE CROOKE,
Lieut. R.M. Artillery, H.M.S. 'Audacious,'

J. BONNAT'S EXPLORATION OF THE VOLTA.

THE name of M. Bonnat has become known through the Ashanti expedition. He has resided for many years in Western Africa, and has probably seen more of the interior of Ashanti than any other European. His most valuable contribution to our geographical knowledge of Western Africa consists in a map and description of the River Volta, as high up as the famous city of Salaga.

On the 7th of December, 1875, M. Bonnat left Akuamu with five boats, propelled by twenty-seven oarsmen. He passed the beautiful Island of Agina, inhabited by troops of monkeys, and reached Mem in the evening. On the following day he surmounted the rapids of Pesse and reached Aurahaye, a small village at the mouth of the Aframe. Above the rapids of Wupe the river is of great depth, its current is slow, and its course winding. A fringe of palm trees separates it from a vast plain towards the west, which is covered with herbage and clumps of gum and butter-trees. Towards the east rise the mountains of Krepe. At Ataurunu, the capital of Avame, M. Bonnat, for six bottles of gin and six heads of tobacco, purchased a thirty years' lease of four square miles of land, and at once set about establishing a factory. He paid a visit from here to Kpando and Anfoie. The former is the most important commercial town in that part of the country. The town was destroyed by the Ashantis in 1869, and its inhabitants dispersed or carried into slavery, but it again numbers


MAP OF THE
VOLTA
from a Map by
M. J. BONNAT.
Published in
L' EXPLORATEUR
SERIMA
ORNATH
SARAHA or SALAGA
PEME
Krompé
Yegiy
New Pajaye
Pajiaye
CHUBRUM
Bediamesso
Bediamesso Rapids
Ihda
Tidessu
Oroto
Rapids
Ketinkpor
Kwaké Dinté
Ledge of Rocks
Labellé Rapids
Contronfi Rapids
Fertile Prairies.
Gum & Butter trees)
Game in abundance.
BRONMEGRUANASHANTI
Akroso
Krobo
Kronfenan
AKWAPIM
AKWAMU
KPANDO
Agramam
Nkami
Shoma
Ahurasse
ANFOIE
TAFIGOME
Port of Ussutaw


Labelle Rapids
Controndi Rapids
R. Ou
GRUAN
ASHANTI
Asukoko
Akroso
Krobo
AKWAPIM
Kronfehan
Numenu
Amandro
Apuma
Semp
Village
Agramam
Klemi
KPANDO
Shome
Ahuraso
Shom
Atuarkuma
ANFOIE
TAFIGOME
Port of
Ussutuw
Village
Boiuku
Rapids
Agmaxua
KREPI
ORAM

Aurahaye
Apono
Prosé
Mem
PEKY
HO
Abutia Mts
Agma
Akwabon
AKUAMU
Rapids of Sinkey
KPONG
Rapids at Medika
Medika
Akusi
Assachare
Mt Godokau
Melardi
Sophué
Ningo
ADAH
Adofo
Atoko
Abulan
AKWAPIM
KTOPO
KREPE
ADANME

700 houses and 2500 inhabitants. Each habitation consists of a large court, surrounded by sleeping chambers. An open shed, in the centre of the court, gives shelter to the women engaged in cooking, spinning, or other domestic duties. Huge earthern pots, supported on posts, serve as granaries. M. Bonnat found the market well supplied with rice, yams, pepper, meat, and smoked fish. Ada-men attended with knives, tobacco, and English cottons, and red cotton yarn. Shea butter, palm oil, skins, rice, cotton, and native aprons, constitute the principal articles available for exportation. The road to Anfoie led through a well-cultivated country, where rice, yams, cotton, and manioc were grown.

At Bobokrum the Volta flows between steep banks covered with many-coloured lianas. Hills rise about 10 miles to the east of the river, and at their foot are built Aurupu, 1500 inhabitants, and Ntumena, 1200 inhabitants, the two principal cities of the Nkagnans. The Apafoboembes, further east, are noted as manufacturers of iron implements.

At Akroso, near the mouth of the Asukoko, or red river, the cargo had to be discharged and carried to the top of the rapids. The rocks here are a conglomerate of pebbles imbedded in an iron-coloured paste. A vast prairie extended to the west, with clumps of gum and butter trees, and abounding in antelopes, wild hogs, leopards, monkeys and all kinds of game. The Labelle Rapids had to be surmounted next. They are the most formidable of all, and when M. Bonnat reached them they were 25 feet in height and about 500 yards in width. During the rains, however, in September and October, the river is said to rise 50 feet, and steamers could then ascend without meeting with an obstacle.

On the 19th January, 1876, M. Bonnat arrived at Krake Dinte, a cluster of twelve villages. He overcame the objections made to his travelling to Salaga, and after a delay of four days was able to continue his journey by land. Talesu appears to be the principal place along the road. It numbers about 1500 inhabitants, and millet and tobacco are grown in the neighbourhood. Leopards and lions are said to be numerous.

At Peme, a town of 6000 inhabitants, the capital of Serima, and residence of the King of Salaga, M. Bonnat was received by the king, who was attended by 300 horsemen. The king assured M. Bonnat that Salaga was open to the traders of all countries, and if those from the coast had not yet found their way thither, it was because of the Ashantis. Mr. Goldsbury, the Governor of Akra, arrived two days after M. Bonnat; he had come overland, through Ashanti, in order to open a road for commerce.

Salaga, or rather Paraha, the great commercial emporium of that part of Africa, stands on rising ground in the midst of a vast plain. Before the war it had 40,000 or 45,000 inhabitants, but three-fourths of the houses are unoccupied now, and the population does not exceed 18,000. The market appeared to be well supplied. M. Bonnat purchased ivory at 6*d.* a pound, wax (40 pounds for 3*d.*) and Shea butter. He sold some silver ornaments at a profit of 80 per cent., found salt a drug in the market, and mentions kola nuts as the article most in demand. Several important roads diverge from Salaga. One road leads to Bontuku, the capital of Diaman, a country abounding in gold and ivory. Another leads to Daboya and Kong, at the foot of the mountains. A third road leads to Dienne, the capital of Dagomba, said to be as important a town as Salaga itself. The distance is stated to amount to 50 miles, and routes diverge thence to Timbuktu and Hansa.

From Salaga to Yegiy, on the Volta, is a distance of 22 miles. M. Bonnat procured canoes there, and descended the river. He subsequently ascended the river in his own boats, as far as Yegiy, where he established a factory. He says that the Volta is as wide and as deep there as it is at Medica, 60 miles above its mouth, and concludes from this that its sources must be far away in the interior.

SKETCHES OF LIFE IN DANISH GREENLAND.

IV.

A BOAT-TRIP ALONG THE COAST.

ON a fine summer day, in the year 185—, we were told to make ready by our future steersman; that is, to give the finishing touch to packing, our main luggage having been in readiness for weeks. "*Autlarsinnakasé*" (Now you shall be able to start). Thus spoke Nis Lynge, a half-bred colonist. "How jolly!—*Kujanak-asit!*" "But do you really think there will be passages through the ice?" "*Assukiak*—I don't know; but the kayakers say so, and we may as well try;" and I ran to tell my husband, and we sent for the child, of course, who was out playing somewhere. No sooner was the welcome rumour spread over the colony, than the large entry to our house resounded with voices and footsteps, heavy steps of the boat-people, and little irregular patters of children, the latter, as volunteers, charging themselves with heavy loads of luggage which they carry away without the least control; but looking out of the window we see all our things spread on the rocks of the beach where our boat's crew is already busily engaged in stowing it away in the proper places in the boat; at the stern end, in the bottom of the boat, our beds, rolled up in waterproof skin bags, were used as *chaise-longues*, and they were softer to sit on than the softest cow-hair; the thwarts right and left served us well enough for lots of small luggage.

In half-an-hour we were standing in travelling-dress. The house was locked up—for how long? Nobody could say. We had a very long journey before us, if the floe-ice only would allow us passages; it was just then barricading the coast all down to Julianehaab, the extreme end of our journey. This colony is the southernmost in Greenland, and the place where I had spent three most happy years directly after our arrival in this country; after which my husband was promoted to a higher office, and we left Julianehaab for Godthaab, and were then very sorry to exchange Paradise for Paris—as they say in Greenland with regard to those colonies. I regretted my lost Paradise, finding it very dull then in Paris, but in time I learned to give this town the preference. The events which I am going to relate in this little narrative happened three years after this change took place; and—with all my dear recollections still alive—I looked

forward with immense delight to the prospect of seeing it again. We were standing in travelling dress. The key to the house-door is given in charge to some friends; on our way down the road we take leave of all of them. On hearing of our departure they have rushed out to bid us farewell; the Greenland women and children have nestled on the cliffs by the sea; others are calling to us from their house-doors. There, now we are comfortably settled on our down canopies; the child sitting before us in her Eskimo hood drawn over her otherwise European dress, and overalls, despite of the summer day, as it is towards evening, and on the sea it is likely to get windy. The flag is wafting astern as from the flagstaff hill, "All right?" "*Taisnâssimaruk*—All right," re-echoes Nis Lynge. "*Ingerdladtluarniarise!* A happy, prosperous journey! Take care in the ice!" Our own village disappears, but, rounding Cape Nouk, we get a view of another little colony, namely, the Moravian establishment, New Herrnhut, usually quiet and dull, but to-day it seems all alive, and here people are also uncommonly active and excited. We turned landwards to call upon the missionaries and pick up our travelling companions, as we, according to promise, had given them notice when we decided upon starting, by sending a messenger over the hills to let them know, and they accordingly kept ready, waiting for us. As to our journey, our prospects were just the same, only that they were foreigners in Greenland, and in so far might have some advantage by following in our wake. They had their own boat and crew, and we had much pleasure in their company when we encamped on shore; but whilst in our boats we were too distant to communicate in a convenient way. Bishop R. and his lady were on an inspecting visit to their several missionary stations, of which the remotest is in the district of Paradise. A younger missionary, who had also just come from Europe, whence he brought a young wife, followed in the bishop's boat, partly in an official capacity to visit the minor stations of the New Herrnhutian district, partly perhaps out of civility to their distinguished visitors. Mr. S., who had, as unmarried, lived several years in Greenland, was well enough acquainted with the Spitzbergen floe-ice, with which we had for weeks been in enmity, on account of its having so long prevented our going. This alike pleasant and unpleasant acquaintance of ours I'll introduce before actually commencing the journey. I am glad to say that it is not a native of our country, being the frozen Spitzbergen sea breaking up in spring storms, and then carried down by the north wind along the east side of Greenland, and afterwards rounding Cape Farewell. It flows rapidly or slowly, according to the strength of winds and current, along our inhabited west coast side, being either a benefit to us or an immense nuisance; in which of these qualities depends upon the following circumstances:—If the ice masses keep at a respectable distance, they are hailed as friends by the Greenlanders, as they bring along with them sea-animals of different kinds in large abundance, especially seals and walruses, but sometimes even bears, and they also protect the bold seal-hunter on his dangerous chase, by forming an impenetrable barrier against the heavy surf of the ocean. So much for the ice masses—our friends! Foes we call them, when too intruding in private localities; when, for instance, they enter the inlets and channels and fill up our boat and ship passages, so much so as to prevent even the small kayaks from getting through with messages to neighbouring places. In such cases we call them hard times with the ice. In the otherwise beautiful summer of 185—, our enemy for a long while was barricading all ports between Julianehaab and Godthaab. But I have not yet done with the description. The heavy masses continually coming in violent mutual contact, as well as being constantly subject to the influence of the surf, are incessantly changing into all manner of shapes and sizes, which is very interesting to observe. For instance, there may be a floating castle, really picturesque, but, contrary to custom, you may detect a streamlet or fall pouring down from a tower or window-sill of the castle. This past, we row alongside a mile-wide tract, smooth as a house-floor, and our oarswomen in such cases are sure to remark, "*Illa kitigfissak angimat!*" (What a nice place for dancing!) Then, again, there are colossal sphinxes and pyramids, slender vases of all sizes, chairs and tables of antique as well as modern shape, arm-chairs with or without old men leaning back in them, swans gracefully diving on the surface, colossal witches, blue grottoes, and so forth. If, now, we were only sure that this curious museum would keep quiet, as is often the case, it would afford immense enjoyment to investigate its various contents, but as the objects generally are in a state of great agitation—a witch, for instance, every now and then sailing down upon a sphinx, after having *en passant* upset several Etruscan vases—we in the frail boats may as well be prepared for the attack of some giant; in truth, seriously speaking, where winds and waves drive about these huge masses at their will, one runs the risk of being crushed, although the danger is generally averted by the expertness of the natives. I have often enough heard a thanksgiving, "*Kuyanak!*" for a happy hair-breadth escape from the ice-mountains or ice-pieces clasping together just behind us; yet I have no disagreeable recollection of such scenes—when travelling in Greenland, quite unavoidable; the critical moment being over, the feeling of safety was such a delightful feeling! I cannot but view those adventures of our Greenland travelling life in a rosy light, and this will perhaps make these little tales monotonous and less interesting than if I were to exaggerate my adventures. The storm might have *pittorarpuk*, as the natives say when a squall suddenly comes on, and I have been dreadfully frightened, but only so for a minute, as the next moment we never failed to reach the protecting harbour.

We left the Moravian beach in good spirits, but only moved on very slowly, as we could not go in a straight line, but were obliged to make many tacks out and in among the windings in the ice-floes, and we did not reach Narsak, only 4 English miles off, at once, as we had hoped to do. Our people especially had been looking forward to it in high expectation, as Narsak was an inhabited place, where they could have slept in houses instead of on the earth, without having the trouble of making tents. They might, besides, have feasted upon national food, and on their departure from the place would have got little presents from their countrymen, as is the custom in most places; the gifts consisting of such trifles as a morsel of dried meat or fish, a pair of new boot-soles, or strings of sewing thread made of sinews; but now

they were fated to have nothing of all that, at least not that day, the very last narrow passage leading to the end of our day's journey being filled up with pieces of ice, and instead of proceeding we had to go back to some proper landing-place, and this happened to be a small bird island. (We hoped that to-morrow's low tide would make way for us.) It was almost with a feeling of awe that one set foot on the dwelling-places of the harmless little creatures; but their peace is quickly disturbed by the uncharitable roughness of the Greenlanders, who no sooner alight on the shore than they rush about in all directions, screaming in a mad way, and totally regardless of the boat, not caring whether it drifted away, which it certainly would but for our aged steersman, who probably would have been up to the same excesses and plunderings had he been young enough. Magida was in a moment snatched by her nurse and dragged up-hill, even in her heavy travelling boots, to gather "maneet" eggs; the young men grasped their loaded guns, and even before we, the old ones, were ready to leave the boat, having first to take off their skin cloaks, the women returned laden with eggs and the down-nests also, beaming with happiness at their "find." It is rather tempting to take the large green eggs of the eider-ducks, finding them so easy to be got, as they lie conveniently on the bare ground, sometimes in little hollows, sometimes on the mounds, all unsheltered; but, nevertheless, my husband and I had no heart to take any, though we have done so occasionally. The duck might herself prevent this robbery, if she only stopped quietly on the nest, but instead of that, alarmed by the unusual noise, she gets frightened, and flapping her clumsy wings in a most conspicuous way, she at once reveals the story of her filled nest, if it be in the breeding season; the Greenlanders instantly start in the direction indicated, and at night, when all are asleep, the eider-duck, who has been swimming round the island among sedges and stones, also returns to her little world and finds her nest gone. A green gull's hill also is a romantic habitation, standing out in sharp relief against the sky. I was always glad to meet with them, especially when the tenants, viz., the gulls,* were at home—one or two innocent white gulls standing statue-like as monuments on their little "Belvedere," never stirring as long as they could be distinguished; at least I never remember to have seen a gull move a hair's breadth. They looked so innocent and conceited at the same time, as if feeling conscious of some rather important mission. I suppose they don't have their nests on this uncomfortable peak; but they live on good terms with the tatterats, and breed among them on the steep mountain-sides. I often envied the gulls, and pictured to myself the pleasure of going on a visit to the merry tatterats. They are a sociable lot, and always seen in swarms at home as well as abroad, and their habitation is like an overcrowded hotel in the fashionable season, in comparison to the desolate gull's hill. On the steepest mountain these pleasant birds are perched by thousands in rows along the prominent edges, so that the uppermost ones look exactly like white lines drawn across the mountain-side, at least any one with bad sight cannot make out the shape of the birds till nearer below; some of them, perhaps the elderly ones, sit quietly perched, never stirring, whilst others noisily bustle about, soaring to and fro, up and down among each other, apparently often intruding upon the old ones, who, nevertheless, remain quite unconcerned by their sauciness. I often used to muse on what they might be thinking of during these merry gambols. On the ground floor—viz., in caves and hollows and clefts of large rocks broken from the mountain and tumbled into the sea below—lived still other sea-fowls, little black ones, with red feet, tranquil, serious little creatures, and extraordinary clever swimmers.* They were also delightful, and I can't forbear saying that I even thought these dark caves with their still waters and rocks, the mountain with the tatterats, a most enviable place of abode to live in, full of romance and poetry.

On the following morning we reached Narsak, a most uninteresting place, where we stopped a few days on account of unfavourable weather and a south-west wind, but I am not quite sure how long. I don't remember anything very distinctly, excepting that our nurse was ill and was left behind, instead of accompanying us further on our journey; she had asked as a favour to go with us to Julianehaab, having never been there before. The crew is generally dismissed at one of the main places when the journey is a very long one (the distance between Godthaab and Julianehaab is more than 300 English miles). At length we made up our minds to try to proceed on our journey; the south-wester, we thought, would have blown over by this time. The elder lady from Germany was in high spirits; she was a painter, and had painted the hours away at Narsak, whilst I busied myself with household matters. In every place we landed I always preferred to move about a little, but Mrs. R. was to make a sketch. A little south of Narsak is Utorkarmiut, where some people lived belonging to the Moravian mission, who were to be visited on behalf of a child that was to be baptised. The bishop, I think, officiated; I can't quite say I remember that, but his wife held the baby during the ceremony, and all the rest of us joined in the singing. The house was uncomfortable, unclean, and narrow, not so snug as a Greenland cottage often is, though I am forced to confess that they are, year after year, not to say day after day, getting worse proportionally as the poor people are mentally degenerating. The colonists' houses, particularly at Godthaab, are exceptions, as also some very good houses to be met with here and there by chance.

As soon as the christening was over we left, bringing with us the father of the baby, who was considered a very experienced kayaker, and well used to the tricks of the floes thereabout; so we hired him for some miles, and we were soon to learn to appreciate his skill. At first we got on all right, and, *unfortunately*, I might say, too easily found passages enough among the icebergs and pieces of floe to bring us just to the point we should rather have avoided, when all of a sudden a heavy fog came on, and there we were, without being able to find our way in any direction, the mountain-peaks that might have guided us being all invisible in the fog. We had our kayakers close at hand, but what had befallen our companions? We

* Kittiwakes (*Rissa tridactyla*).

* Dovekeys. (*Uria grylle.*) Called by the Eskimos *Servak*. Black Guillemot.

did not see them; maybe they were close to us, perhaps behind the nearest floe! We were at a loss; it was a real dilemma. We ourselves were in some measure used to such occurrences, though not better off, for that matter; but the poor German ladies, who did not know more of roughness at sea than what they might have experienced on the waters of the Rhine, I suppose, must have thought it a very unpleasant situation, and so it really was just then. We did not know what to do, and stared at one another, making appeals to our pilot, who at length, after a little meditation, with great coolness and collectedness alighted from his kayak and mounted the top of some huge floe; and, to be sure, our David had a majestic look as he stood there investigating the wild masses and, waving his hand, pointed out the way to us. Without knowing it, we happened to be much closer to land than we had dared to hope; and after some roundings we turned into a bay, a most welcome little desolate harbour, where we, to our immense joy, discovered our companions all busy unloading their boat. We had not been long parted, yet we had no end of embraces and welcomes, and much to tell on both sides, and what a snug little home on that most barren Skinnerval! I think the name signifies a "whale;" at least the mount, a massive promontory, stretches out into the ocean very much in the same manner as a whale in wending its way through the sea; and then the very nakedness of the cape reminds one of the hairless body of the whale. But I think I have been abusing the dear mountain, and hasten to make amends; I am as fond of this place as of any of the pretty places in Greenland; God has made this Skinnerval, and so it also has its charms. After having pitched the tents, we set out on a walk, climbing slopes, crossing rivulets, in our way picking a single rare flower; and I was quite glad that Mrs. R. could give us her agreeable company, finding no allurement here for sketching. Next morning's light had cleared away the floes—taken them seaward—and we managed delightfully, going southwards in splendid weather and high spirits. Our first stoppage to get a few refreshments was, I remember, on a long sunny island; we were looking forward to reach the Fiskernaes, our neighbour colony, in the evening. We did not dare to make long stops at our landings, although it was often necessary to let the crew have a hasty meal, with an extra allowance of coffee; so now they had to make the coffee, and in the meantime dear Mrs. R., who had not yet got familiar with the Greenland mode of travelling, had taken it into her head to cook a regular German dish for us, and we had great difficulty in getting her persuaded that the time was too short. "Oh," she assured us, "she could do it in no time;" but ere the argument had come to an end, the people called out that coffee was ready! We did not waste much time in taking it, and we had no sooner done so than we were on our old track, the girls pleasantly singing to the oars and making merry with each other. Later on we had our dinner exactly in the same style as the breakfast—the large box with our provisions was taken on shore, opened, and the things spread out on the open cover, and, sitting on the warm stones (it was so nice and sunny!), we enjoyed ourselves as much as our hurry would permit, An unexpected surprise had been in store for me here at "Noukarêet." I had gone this route before, not in a boat as now, but at sea in a yacht, and therefore I did not know the very spot called "Noukarêet;" but as it is a point of importance between the colonies, I had often heard the name, and was in high expectation of seeing something really picturesque in form of three uncommonly lofty summits or glaciers ("Noukarêet" signifies "three brothers!"), but, instead, after incessant roundings through smooth channels of unrippled water, after, at least, turning one point, I got sight of my hoped-for giants—three very regular stone cairns on a very low green hill; they actually resembled three little men of a very plain aspect, but with something peaceful and cordial about them that quickly turned my astonishment and disappointment to satisfaction; they seemed kindly to beckon to us, and I was quite pleased to find that this was the very place to bring a provision box to. Refreshed anew, we again started, though we all would have liked to stop for a walk or remain lounging on the strand, but if we wanted to sleep in beds that night we should have to pull away as fast as possible. We again jumped into the boats, and after several miles' progress through beautiful lake-like channels and ever-varying scenery we reached the "Gradefiord" ("grade" signifies "cry," so it is a most lamentable name); but why the place, with its pretty surroundings, should be thus called rather puzzled me; here the mountains again are high, bordered with vegetation below, and with ice-crowned tops. Though well peopled, the place has a dreary appearance; this impression may be attributed to a dreadful accident that happened a number of years ago, the second year after we settled in Greenland, I believe; it occurred in winter, but the time I am speaking of being summer, I shall leave it unrelated, as I intend to exclude all that is grave from these pages, and from all I am going to tell. My husband, the inspector of the districts in South Greenland, had business to do here, so we had to stop on shore for a while; and while he settled affairs with the half-bred governor, the rest of us roamed about on the hills, and I helped the Germans, in the capacity of translator, to get up a little conversation with the Greenlanders. We made them presents of coffee and sugar, and bought some trifles of them, which always makes them over-happy. Our crews made their stay as profitable as possible, feasting away on national delicacies, seal-hunting being successful just then; and several kayakers happened to return with seals during our short visit. The poor hospitable people were dreadfully sorry to let us go, but remonstrated without success; some tried to get us persuaded with a childish trick, inventing a story about the passages to the south being probably filled with ice, but we wanted to run the risk nevertheless, and we pushed from land amidst peals of laughter from our own people, as well as regrets from the others, and the usual "A prosperous journey! take care of the ice!" followed us from shore. We first had to cross the fiord of the lamentable name, so we could yet a long while see the point we half unwillingly left; unwilling, partly because we were getting tired by this time and in need of rest; and if we could only have made sure of fine weather the next day, we might as well have passed the night at "Gradefiord," but in case of bad weather it would have been a bad job; so it was of some importance to reach the colony at once. The

people pulled heartily away; they are wonderful rowers, the Greenland girls! The rest of the day was as fine as the beginning, only that the calm and peace of evening is always preferable, at least to my fancy; and I cannot resist letting you have one more glance at the beauties spreading around. We silently passed through a quiet, long, street-like dark canal, with golden ripples on its waters, from the rays of the full moon: right before lay a colossal black mass like a great castle, all in the shade, excepting its turret-like peaks, which had a touch of the golden (not silvery) light of the moon; all tints had a warm hue, and twilight brought no chill. On the sides we had low but steep wall-like hills, and this made one feel as in a Venetian street—yes, quite Venetian! and what a rare contrast to the unpoetical "Three Brothers" we dined with at noon. This was a picture never to be forgotten. Two English miles separate Venice from Fiskernaes; there we arrived late in the night. This being a principal colony, we were going to make a longer stop there, and we once more enjoyed the comforts of civilisation, which, after a lengthened spell of nomadic life, is not likely to be undervalued.

Three weeks after this we found ourselves at the journey's farthest end, viz., Julianehaab, where I was to meet my father, who had been appointed governor there after we had left, and whom I had not seen since five years before my marriage, not for ten years at that time; previously we had also lived much apart, so we were almost as strangers to each other. He now lived in our former house, we, of course, lodging with him in our dear old home—so bright not long ago, and now, how dull and dreary! My mother was obliged to remain with her children in Copenhagen, in order to have them properly educated. This lonely life on the part of my father of course made the governor's house a dull place. Many other changes had besides taken place in the short time we had been away, so I was not sorry to leave, after a week's festival; people were very kind and hospitable, but in this place I felt the want of something beyond common civility. So I looked forward with much pleasure to our home journey, of which the first part at least seemed to promise much fun, as we were to make a whole fleet of boats all going northwards. Among the different travellers, who were all separately furnished with crews, tents, and the like, was an Englishman who had for some years been travelling about in the southern districts, and was alike popular with the Europeans and the Greenlanders. We all got on wonderfully together, and left the colony on a fine day in the afternoon. My poor father stood waving his handkerchief on the beach among the others, and looked quite deserted in my eyes; but, unused as I always had been to think much about his fate (to excuse this want of consideration on my part, it must be remembered that I was very young), I was lighthearted enough to enjoy the beautiful evening and our first *table d'hôte* at night amazingly. The travellers all agreed upon giving over their provisions to me to arrange a common supper for us all, and I had the table spread on the ground in our tent. The place we had chosen for our picnic was the most tranquil one imaginable, all the surroundings almost solemn in their silence, which, however, had no influence upon the many boats' people, men and women; they seemed only disposed to merrymaking and gaiety around the flickering flames of the heather. After supper we immediately parted for sleep, as we had to break up early in the morning, which we also did, and after this day's journey we were all comfortably lodged in one house at Kagsimiut. Some of us had beds, others had their bedding bags spread on the floor, but first we had a first-rate merry supper together, and were splendidly regaled with hares and ptarmigans, raisins and almonds for dessert, grog and cigars for the gentlemen; no drawing-room for the ladies, which did not much affect either the Eskimo wife of our Danish host, the governor of this sub-establishment, nor myself, as I should certainly have kept away from it for my part, as I always preferred to be in gentlemen's company, as well as ladies'. This was a jolly day and night; not at all in the romantic style, as the evening before had been; all of us packed together in one room, not the airiest, as the gentlemen did their best to fill it with tobacco, and then the flavour of the dishes and odour of the skin-garments entered. But we had much fun going on, discoursing, disputing, and chess-playing, and music on the harmonica. The old governor was in high spirits, entertaining us with all manner of intelligence and occurrences that had happened, and stories from his early Greenland life—what had befallen this or that year—how well he had known my father in his youth, when they had both just recently arrived in Greenland, but that was some thirty years ago—and so forth. Old Mr. Motsfeld, as well as his old friend my father, are by this time no more. Kagsimiut, as it is situated far seawards, is a good place for seal-hunting, but has a very scanty vegetation; yet I found reasons for liking the place very much. Our people also were in high spirits, and had enjoyed being among their countrymen. At our departure from Kagsimiut we had to part with some of our travelling company, as one boat with one of the assistants was to return to Julianehaab, but the pastor and the Englishman, with their crews, were to accompany us still a good many miles north.

I shall make my home journey short and sweet, as you say in English, though I am much tempted to mention many more places separately. At Arsouk, a sunny nook, a green valley beneath the high Kounak, we next made a stop, and also found a hospitable old Dane, whose house was much smaller than the one at Kagsimiut, but by far the snugger. He offered us to dispose of the whole, and we were despots enough to turn him out. I suppose he went to sleep in a native cottage. My husband had business to transact here as well as at the neighbouring place, the celebrated Evigtut, the cryolite mines, so we led a regular sort of life for some days; had meals at fixed hours, at which we had the pleasure of our kind host's company. One afternoon, I believe the very first after our arrival at Arsouk, we accompanied Mr. T. to his main station at Evigtut. The scenery of Arsouk and its surroundings is most splendid, especially on a fine summer day. This place is ever dear to my memory, on account of the many happy hours we have spent on the various occasions we have visited there; in which my daughter quite agrees with me. She had a little friend there among the Greenlanders, called Julia, of whom she was very fond; she was a half-breed, had a very fair complexion and light hair, and was very nice-looking; but, strange enough, somehow as she grew up she looked rather coarse and vulgar. I saw

her about the time we were to leave Greenland for ever "and for ever," and I found her much altered. So much for Julia. We passed some very pleasant days at Arsouk, the pastor living with us in the governor's house, as we were still to travel together part of the road northwards; but Mr. T. was to remain here, so we bade him farewell on our last visit to Evigtut. Although this place is 6 miles distant from Arsouk, we paid more than one visit the short time we stayed there, which may serve to show you how little we consider distances in Greenland, where we think no more of paying a visit of 6 miles off than of going from one street to the other. Farewell, Mr. T.; but only *au revoir*—for he had promised my husband to pass next winter at Godthaab with us, and partly act as physician, as we had unfortunately lost our kind Dr. L. I shall slip over many dear places where I would really like to linger awhile, but, for fear of being tedious, I leave many names and occurrences unalluded to. Our pastor was gladly received by his wife and child at Frederikshaab, whilst we, after a short stop, started for Fiskernaes, where our boat-labours were to come to an end, whether expected or unexpected I have now forgotten. But why? I know, because the yacht from Godthaab was there to take us back. We were very glad, for though we had got on very well on the whole, we had undergone much fatigue, so it was agreeable to look forward to some leisure in a real little ship, where we had nothing to do but to mind our own comfort, leaving the captain the trouble of bringing us home; and then to see the colonists, viz., the yacht's crew, made us feel almost at home again. With a fair wind from the south-west, we could make the passage in twenty-four hours. The breeze we actually had, and in one night we had passed the Gradefiord—the three brothers—the Skinnerval and Narsak; and now, on a fine autumn morning, with all the mountains wrapped in a thin snowy veil, we steered our ship into the narrow waters beneath our own homely mountains, the Antlers and the "Malenes," past the silent New Herrnhut, and there, rounding the last point, we were welcomed with shouts from land: it was the well-known ship's cry, though not so vociferous as for the real ships, that is, those from Europe. The colony was rather deserted just then, as the reindeer season had not yet ended. Of the Europeans, some were away on colonial business, some had left for good, being removed to other colonies, their substitutes not having yet arrived. We were glad to find the colony thus quiet for a little time to come, as we were tired, and had lots of work and preparations to make for the new comers who might soon be expected. We looked forward to a very gay season next winter, as in addition to ourselves, the two pastors with their families, the assistants, a numerous governor's family that would arrive from North Greenland, Mr. T., not to forget the Moravians for rare occasions, we would be quite a stock of Europeans, and promised ourselves a jolly winter; and, to tell the truth, we had a very merry season, with balls, concerts, and parties. On board the yacht we could observe all that was going on on shore; thus we saw our cook, Master Elisaus, drop in at the governor's, and soon after emerge and lazily ascend the road to our house; we easily guessed he had been to fetch the "key" (perhaps you remember it, the key that was given in charge of some friends on the day of our departure), and before the yacht was safely moored to the bolts on the beach, we saw light wreaths of smoke ascending from our own hearth, from the never-to-be-forgotten home where so many happy hours have been "whiled away." On landing we were greeted by the few remaining, and were pleased, as before, to find the place so quiet. Thereupon we directly had a nice breakfast at the assistant's.

THE GERMAN EXPEDITION TO NORTHERN SIBERIA.

THE German Expedition to Northern Siberia has already reached the town of Obdorsk, the most northern station of any importance on the Ob, and the present time may therefore be a fitting one to review the progress of this interesting expedition, from the period of its setting foot on Asiatic ground up to its arrival at what will probably be the extreme northern limit of its investigations.

The work of the expedition may be fairly said to commence at the station of Salitzkaya, which was reached on the 5th of April, and where a large stone obelisk marks the boundary between Europe and Asia, these names being inscribed on the western and eastern faces respectively. Ekaterinburg, which was the next place of importance, boasts 30,000 inhabitants, and forms a mart for the dried fish which is brought from Tobolsk on sledges. The Museum of the Ural Scientific Society contains here many specimens of mammoth tusks and remains of the *Bos primogenius* and the *Rhinoceros trichochinus*. The chief industry of this town consists of private stone-polishing establishments. Their passing of the Siberian frontier was welcomed with a snow-storm which lowered the temperature to 13° R., and on the 20th of April Omsk was reached. Here they received a visit (amongst others) from Professor Slowzoff, who is a great collector and connoisseur of plants and animals, and who showed them specimens of the wild sheep (*argali*), the wild ass (*kulan*), and the tiger from the Altai range. Omsk contains about 30,000 inhabitants; the houses are mostly of wood, while the official buildings are built of brick. There are several churches and a government military gymnasium or cadet-school, where there are 360 pupils.

A review of the Cossacks was here held, and Dr. Brehm remarks that they are remarkably fine fellows, that their uniforms are soldierlike and smart, and that they are mounted on capital Kirghiz horses, which they manœuvre with wonderful dexterity.

Beyond Omsk the party entered on a desolate steppe, which, however, six stations further on, affords pasture for large herds of cattle, horses, fat-tailed sheep, and goats. About 150 versts from Semipalatinsk the first camels were seen grazing unheeded on the steppe. The way lay along the right bank of the Irtysh, which is here a fine winding stream about as broad as the Rhine at Cologne, but not well adapted for navigation in summer, owing to its many sandbanks. The country here begins to testify more and more to the influence of the sandy soil, dunes appear, the soil is pregnant with alkali, and salt vegetation

occurs. Lakes are to be seen, inhabited by ducks, swans, and geese.

Dr. Brehm remarks that the Cossack villages here are cleaner than the Russian and the Siberian, and the inmates appear more thriving. Everywhere the tenure is military; the Cossacks pay no tribute, but are bound to supply horse and uniform, while the youngsters are regularly drilled. In each village there are churches and schools. They possess extensive herds of cattle, practise agriculture, and engage in fishing. The felt tents of the Kirghiz are also to be seen along the way to Semipalatinsk, and increase in number as one approaches that town.

At Semipalatinsk, where they were received with great hospitality and kindness by the governor, an *argali* or wild-sheep hunt was got up in their honour, and Dr. Brehm had the satisfaction of killing the only head bagged. The golden eagle is here employed for hunting the wolf and the fox. After witnessing an interesting horse-race between Kirghiz, the party left for Sergiopol, which was reached on the 7th of May, and from which the snow-capped range of the Tarbagatai is visible. Some interesting specimens of fish from Lake Balkash were here brought to the German savants. Soon after entering the steppe beyond, the *fauna* underwent a change; the eastern turtle-dove, the white-throated Alpine lark, and the gray-headed wagtail, being here seen. Beyond Karakol, where two of the party remained behind, the first agricutural Kirghiz appeared, large wheat fields being here cultivated by them. The steppe is here covered with rhubarb, hemlock, and spiræa. On the 8th, they came upon a regular salt steppe, where the horses sank up to their fetlocks, and the dust was very distressing. After halting for a couple of hours at the west side of Ala-kul Lake, they made their way round to the southern margin, where the view of the lake, with the Tarbagatai mountains in the rear, was peculiarly imposing. The birds were very numerous here, embracing gray geese, ducks, swans, cranes, mews, and others. They put up in the tent of Sultan Abin Dair, who traces his descent from Ghingis Khan, and has 2000 tents subject to him. Lepsa, which was reached soon after, is a picturesque town with about 3000 inhabitants, mainly Cossacks. It was founded soon after the conquest of Turkistan; the Cossacks engage partly in agriculture, and to a great extent in keeping bees, the honey of which is of an aromatic flavour, and is sold to traders from Tashkend. Several interesting specimens of fishes were here obtained through the aid of a fisherman whom the party engaged for the purpose.

The travellers left Lepsa on the 17th, and after revisiting the Ali-kul Lake, entered on the steppe, the weather being very hot. On the 21st they reached Chugutchak, a town surrounded by high walls with battlements, as a defence against the Tungans, who, in 1866, completely destroyed the town. Here they visited the Chinese governor, General Dyun, who entertained them hospitably, though much difficulty was experienced through the conversation having to be translated successively from Chinese into Kirghiz, Russian, and German, and *vice versâ*. The travellers were present at an archery match, but as the mark was only 40 paces distant, and as 60 paces behind it there was a dense crowd of spectators, it may be imagined the shooting was by no means first-class.

The next place of importance was Saissan, the road towards which lay through Chinese territory over a steppe of about 3000 feet elevation. Saissan was reached on the 26th of May; it is a frontier town, used as a military station, and is already a place destined to play an important part in trade communication with China. Large caravans even now pass through it, on their way to supply the Chinese army with meal. Saissan was left on the 31st of May, an earlier departure having been prevented by the swollen state of the Black Irtysh and its tributaries. At a distance of only 200 versts from China it is navigable, but no use is made of this opportunity for trade. The party embarked in a heavy-made *lotka*, about 25 feet long, which was propelled by huge paddles, the wind proving adverse. The animal life seen along the banks was most plentiful, and embraced, amongst many others, pelicans, cormorants, ducks, and birds of prey. A net was let down, under the direction of some of the crew, who were fishermen, and a rich haul of fish, including a sturgeon 3 feet long, was obtained. On reaching the mouth of the Black Irtysh they began to suffer from gnats, a plague which increased in intensity on the Ob, and for which there seemed to be no remedy.

On the 2nd June an excursion was made to Saissan Nor, where fishing and the preparation of dried fish goes on extensively at about twenty stations, each of which earns about 4000 rubles annually. On the following day the party set out northward across the steppes, which closely resemble the Gobi, and which in spring-time are rendered impassable by the mountain torrents. Several specimens of the *kulan* or wild ass were seen, and, after a wild chase on the part of the Cossacks and Kirghiz, a young one was captured. On the 4th their way lay across a hilly country traversed by small streams, forming the outer spurs of the Altai. Here the vegetation and animal life was plentiful, and Kirghiz settlements were frequently met with. These spurs consist of granite, crystalline slate, and a sort of hornblende porphyry, and present a fantastic though bleak appearance.

After experiencing a friendly reception from the governor, they proceeded towards Maiterek, where active preparations were being made for the annual inspection of the troops stationed there.

On leaving Maiterek, the rain was so heavy as to make them recognise the valuable advice given by Professor Radloff in Kazan, who had recommended leather cloaks and high waterproof boots for travelling in the Altai. Those belonging to the party only reached up to the knee, and were a very insufficient protection against the downpour.

A visit was paid to the Marka Kul Lake (about 5000 feet high), which, surrounded by snow-covered and partly forest-covered mountains, rising to the height of 1500 feet above the lake, presented a very picturesque appearance. The Kuldjir stream forms the outlet of the lake, and discharges itself into the Black Irtysh. The lake abounds in fish, but this source of produce is not made use of except to a very small extent by Chinese, Kirghiz, and Russian peasants from the Altai.

On the 8th the Chinese officers of the frontier station of Kuldja, with numerous followers, came to meet the party, in order to make arrangements with the governor respecting the revision of the frontier

line. On the 11th of June they reached Stanitza, a picturesque little station in the Altai, composed of eighteen wooden houses inhabited by Cossacks. A very hearty reception was here accorded to the party, and a pleasant evening was passed in the company of Major Alexis Ivan Bachireff, the commander of the station, and his Cossacks.

Serianofsk was the next halting-place. It is one of the most important mining establishments of the Altai—gold, silver, copper, lead and tin being derived thence. The gold is smelted on the spot, while the remaining ores are conveyed either along the Irtysh or in waggons to Smeinogorsk, Barnaul, and other places. Serianofsk yields 725,000 puds of ore per annum, the amount of silver being about 50 puds, and that of copper 15,000 puds. The mining operations are carried on in the German fashion, under the direction of M. Bastrigin and two assistant mining engineers, but no steam-engines have yet been brought into use. There are about 400 workmen employed, about half of whom are Kirghiz.

On the 16th of June the party embarked on board a "Karbass," as the vessels used for carrying ore are called; they have large square sails, and two long sweeps which are worked by seven or eight hands. Along the Irtysh the scene reminded the travellers of the Rhine. The animal life is very rich here, the birds being especially varied and numerous. At Usti Kamenogorsk the travellers inspected the schools erected for the Kirghiz children, and heard them examined in geography and history.

Smeinogorsk, which they entered on the 17th, is no longer a place of mining activity, and is engaged only in smelting ores brought from Serianofsk, Rybinsk, and other mines. Smeinogorsk means snake-mountain, and during the stay of the German travellers a good number of large snakes were caught alive and brought for their inspection. A detour of seventy versts was made in order to afford them an opportunity of visiting the famous stone-polishing manufactories of Kolivan. The establishment is the private property of the Emperor, and here large objects of porphyry, jasper, marble, &c., are turned out.

On the 21st of June, Barnaul was reached. This town, the capital of the Siberian Altai, contains about 13,000 inhabitants, and formerly all the gold of Siberia was sent here to be smelted, but now only that got from the Altai is conveyed thither, the produce of the remainder being worked up at Irkutsk. The Museum attracted the special attention of the travellers, the zoological section (in which were two stuffed tigers caught in the Altai), the ethnological and archæological sections being peculiarly interesting.

Meat at Barnaul is excessively cheap, being nearly thirty-two times as cheap as in Germany. On the other hand, dairy produce and wine are very dear. In fact, a biscuit bakery and cheese manufactory for the Siberian markets would prove perfect mines of wealth, as nearly all that class of produce comes from Moscow. Some, however, know how to turn the natural resources of Siberia to good account—witness M. Funk, who for some years has supplied the whole of Siberia with shot, and M. Prange, who manufactures soda largely.

The following day the travellers embarked on the Ob, which was at its height, and presented an imposing appearance. In order to make themselves acquainted with part of the north-western Altai, they landed and made their way to the silver mines of Salair. The forests, before entering Salair, were composed of magnificent trees, and the vegetation showed also great luxuriance. After again embarking on the Ob, Tomsk was reached on the 1st July. From Salair to Tomsk the soil was similar to what it had been after leaving Barnaul, *i.e.*, of a fine black sort, well adapted for wheat growing. Horses are bred in considerable numbers here, one village alone being possessed of fifteen hundred, while the number of inhabitants was only one-third of that number. The beasts are of a remarkably fine quality, and are about one-tenth of the price that they would fetch in Germany. In Tomsk the travellers made many purchases for their voyage down the Ob. The steamers belonging to Messrs. Kolchens and Ignatoff ply weekly between Tiumen and Tomsk. They tow up stream the barges used for the conveyance of convicts, which craft on their downward journey are generally freighted with goods, often with tea from Irkutsk. The 'Belyetchenks,' the vessel on which the expedition embarked, is a fine iron paddle-wheel steamer of 120 horse-power. The engines and other fittings were made in Nijni-Novgorod, and the hull built in Tiumen. The general arrangements for the accommodation of passengers were most excellent, and the steamer is altogether superior to the German river steamers.

Samarof, a town of about 4000 inhabitants, near the confluence of the Irtysh and Ob, was reached on the evening of the 5th July, the journey thither from Tomsk having presented no very noticeable features beyond the enormous mass of water conveyed by the stream, which, when it is at its height, forms islands at such frequent intervals as to make it hard to recognise the main channel. M. Ignatoff has caused a map to be prepared which shows minutely all that part of the system of the Irtysh and Ob, from Tiumen to Tomsk, which his steamers ply along. On the 4th instant, the wind increased so that the vessel commenced to roll, and sea-sickness ensued. For the journey beyond Samarof, they found that they had been provided with two *lotkas** or boats, through the generosity of M. Semzof, a merchant of great repute along the Ob.

At Suchorofskaya, the German travellers made the acquaintance of M. Poliakoff, curator of the St. Petersburg Museum, who was waiting until the advent of the fishing season to make researches on the ichthyology of the Ob.

The types of the Ostyak natives became more frequent on proceeding further northward. The regular type is black hair, dark eyes, and middle stature, but exceptions, such as gray and blue eyes with dark hair, dark hair and fair beard, are not unfrequent. They have intermingled to some extent with Russians, Tatars, and Samoyedes, so that the original race is with difficulty distinguished.

The picturesque village of Malo Atlim was reached on the 7th of July, and an interesting excursion made to a neighbouring forest, when the natural history collections were enriched. Here the travellers made the acquaintance of the mosquito in all its ferocity. These pests, on the approach of summer, swarm in myriads on land and along the river banks, the centre of the stream alone being comparatively free from them.

* The *lotka* is a sort of gondola-shaped vessel about fifty feet long, propelled by oars, a mast being rigged sometimes for ascending the stream with.

On the 9th of July the party reached Berezof, the only town on the Lower Ob. Its two churches and government buildings give it the appearance of being more important than it is, the number of inhabitants being only 2000. Here they engaged the services of one Michael Panayeff, a Russian, who knew both the Ostyak and Samoyede tongues. The party left Berezof in company with Dr. Krzywicki, a Polish practitioner, whose district extends for more than a thousand versts in length, with a population of one soul to every nine square versts. Civility was quite the rule, one instance alone of rudeness being met with, and that on the part of a Russian owner of a fishing station.

The thirteen intervening stations between Berezof and Obdorsk do not call for any particular remark; beyond that at Paravatskaya, the tenth station, they came in sight of the snowy Ural Range, which lay behind the pale green streak denoting the distant river bank.

At Obdorsk, they met the members of the expedition despatched by the Society for the Encouragment of Russian Commerce and Industry in St. Petersburgh, to survey the courses of the Baidarata and Chucha rivers, which flow into the Sea of Kara and the Ob respectively, and to determine the possibility of connecting them by a canal. Both the German and Russian Expeditions were much struck with the prevailing ignorance of the inhabitants respecting all topographical details, the distance to the Chucha river (the mouth of which many had passed) being given variously from 150 to 200 versts. According to the last advices the German travellers had arranged to accompany the Russian Expedition in their exploration of the Chucha river, and, if possible, to despatch letters homewards by some fishermen, on their arrival at the mouth of the stream referred to.

THE EXPEDITION TO THE LENA AND OLENEK.*

By A. L. Cheranovski.

My intention of exploring the lower course of the Lena and the Olenek, in the summer of 1875, has been successfully carried out. In the course of 1874 we had reached our furthest point north, in winter, and I was anxious to visit the same localities at a more favourable season of the year. One of the principal objects of the first Olenek Expedition had been an examination of the rocks of mesozoic age, which had been discovered in the district of Taymir, in New Siberia, on the Olenek, and in the Valley of the Yenisei. These rocks had first been discovered by Lopatin, at the mouth of the Yenisei, and they cover a large area in Northern Siberia. Ceratites and inocerami had been discovered in them, but before anything definite could be stated with respect to their age, further stratigraphical and palæontological examination was absolutely necessary. The first Olenek Expedition was fitted out with that object, but although it brought home valuable scientific results, it reached the Lower Olenek too late in the year to enable it to examine into its geology. The environs of Verkhoyansk were, however, explored geologically, and the fossils collected there have yielded interesting results. Meglicki, who had carefully examined the mountains of Verkhoyansk, considered that they belonged to the carboniferous formation. I have arrived at a different result. Even whilst travelling north I observed no indications of having passed beyond the mesozoic formations. I had collected fossils in the spurs of the mountains of Verkhoyansk, and amongst rocks apparently identical with those described by Meglicki. These fossils I forwarded, on my return to Irkutsk, to the Academician Schmidt, who informs me that "the shells from Verkhoyansk are identical with those of triassic age found in Spitzbergen, and those from the Olenek are probably of the same age." The Olenek Expedition has thus corrected the errors of previous observers with respect to the age of the mountains of Verkhoyansk; it has proved that mesozoic formations occupy a far wider area than was supposed hitherto, and has supplied materials for bringing it into connection with the trias* of Spitzbergen.

A further examination of these mesozoic rocks, and more especially of the carboniferous strata associated with them, appeared to me desirable, and guided the plan of the expedition now under notice. I desired, above all things, to explore the Lena below Yakutsk, and the mouth of the Olenek. The Executive Committee of the Siberian section of the Russian Geographical Society procured me letters of recommendation, which ensured my being supplied with provisions, and with a Government pass enabling me to travel by mail.

I proposed to leave Irkutsk on the 1st of May, 1875, but illness detained me until the 15th, when I started, accompanied by M. S. J. Venglovski, who was anxious to explore the far north, and whose services proved invaluable to me. On the 1st of June we were at Yakutsk. The governor, M. W. P. de Witte, received us kindly, and promised every assistance in his power. The preparations for our journey detained us for a few days, in the course of which I made several excursions in the vicinity. I visited, amongst other places Marka, a village inhabited by Skoptzi, and was surprised to see the success with which they cultivated the land. I was likewise interested in the bee-culture, which promises success, and found that the breeding of sheep and horses was making progress.

On the 7th of June we started. We journeyed in an excellent mail-boat, called a 'Devyaterik,' accompanied by a Cossack, an experienced pilot, and two rowers. We had heard much about the winds which are said to impede navigation on the Lower Lena, but all affirmed that we might depend upon reaching Bulun at least by the 1st of July, which would have enabled me to explore the *tundra* at a favourable season of the year. But the season was exceptionally unfavourable, and even old people could not remember a summer during which northerly winds were so prevalent. The current at first carried us against the wind, and on the 16th of June we passed the mouth of the Vilui. But the freshets of spring begun to subside then, the tributary rivers discharged smaller

* *Istvest. Russian Geographical Society*, xii., 1876, p. 161. See *Geographical Magazine*, 1875, p. 228.

* *Monotis salinaria* predominates amongst the shells collected by me. It is widely distributed, and has already been discovered in the trias of California, Alaska, Spitzbergen, New Zealand, the Himalaya, and Austria.

volumes of water, and we made but little head against the wind. On the 1st of July we were at Shigansk. Navigation became exceedingly painful then, and even dangerous, for we dared hardly venture to move except when the wind became lulled for a time, and were sometimes unable to proceed for hours and even days. We arrived at Siktyakh on the 23rd, at Bulun on the 26th of July.

The wind still continued to blow, and it appeared hopeless to continue this journey to the mouth of the Lena. The season was far advanced. I had hoped to meet with fishermen on the Lower Lena who knew me, and would have been of service to me, but the fishing season terminates on the 21st of July, when the natives remove to the tundra or to the islands of the delta, to hunt reindeer. The banks of the Lower Lena were thus deserted, summer was rapidly approaching its close, larches and other plants already exhibited the approach of winter. The first hoar-frost fell in the night from the 22nd to the 23rd of July, and the usual autumn fogs, we were told, might be expected daily.

We therefore abandoned our journey down the river, and moved to Ayakit, 25 versts below Bulun, whence we proposed to start with reindeer for the Olenek. On the 31st of July we were able to leave, and camped in the evening on the "barren" tundra. A few days afterwards we reached the great northern tundra. Where these two tundras join, the land is barren, stony, and rugged. The northern tundra differs essentially from that of Western Siberia. We travelled by short stages, and had thus time for thoroughly examining into its character. On the 19th of August we reached the Olenek, at the northern limit of trees, which are here, however, very stunted in their growth, and sometimes even creep along the ground. Tracing this river downwards, we reached its mouth on the 26th August. Here we pitched our tent at the foot of the Tumul, on the right bank of the river. Two decayed graves were close to our camping place, overgrown with lichens, and there are still the remains of a cross; and we learn from an inscription, that we stand before the graves of the unfortunate Pronchishchef (died 11th of September, 1736) and of his heroic wife. Ten years had this heroic pair lived on the inhospitable shores of the Arctic Ocean, in the vain hope of being able to discover a road by sea between European Russia and Kamchatka. They did not succeed in this, but their descriptions of the shores of Northern Siberia have ensured them a prominent place amongst Arctic explorers. Fresh efforts are being made now to solve this problem, and although a single vessel may happily succeed in performing this voyage, I do not for a moment suppose that such a route would be commercially available. But surely the memory of Pronchishchef, who attained the highest latitude on the Siberian Polar Sea, in a boat, ought to be honoured now, and his neglected grave ought to be restored.

Before retracing our steps to the south, I was determined to behold the open Polar Sea, which was hidden from us by the delta of the river. We proceeded for that purpose to the Krestovoi (Cross) Cape and then returned to our camp. We found there six families, who were engaged in laying traps for Arctic foxes. We supplied ourselves with winter clothing, and on the 6th of September started upon our return journey to the Lena, reaching Bulun on the 18th of that month. The prognostications of unfavourable weather, which we had heard on leaving the Lena, had not been fulfilled. The tundra was certainly covered with hoar-frost when we reached it, but there were also fine warm days and unclouded skies. The winds continually changed their direction. Fogs did not occur at all. Vegetation, always stunted, finally disappeared on the open tundra, but it was always most luxuriant in the deep, rocky, and picturesque valleys of the rivulets which intersect it in all directions. Snow fell only on a few occasions, but neither snow nor hoar-frost appeared to exercise any influence upon the flora. On the 22nd of August, when in lat. 72° 30′ N., we felt the heat of summer, had a thunderstorm and a violent downpour of rain. Our herbarium increased in specimens up to the 27th of August, but on that day snow began to fall in large quantities, and soon buried the whole of the country below a white pall. Milder weather returned, the snow disappeared, but vegetation did not again return to life. But the insect-world again put in an appearance about the middle of the day, and even after the 14th of September swarms of ephemera and phryganeæ might be observed in the evening, in lat. 71° 30′ N., hovering over the rocky bottom of the valleys, warmed by the day's sun.

We had not met a single human being during our journey from the Lena to the Olenek. That river, and the shore of the ocean, was less deserted. The approaching winter had compelled the natives of the tundra to descend into the Olenek Valley, where drift wood is found in abundance; whilst fishing is continued on the shores of the ocean until late in the autumn. Our reception amongst the sons of the tundra was kind in the extreme, and we availed ourselves of every opportunity to become acquainted with their mode of life.

At Bulun we were detained nearly a month, until the Lena froze over, which happened on the 11th of October. On the 16th we left; on the 27th we reached Verkhoyansk, and on the 15th of November Yakutsk. After a short stay there we continued our journey to Irkutsk, where we arrived on the 20th of December, after an absence of seven months, in the course of which we had travelled 11,000 versts.

We have made a route survey of the Lena, from Yakutsk to Ayakit, and thence through the tundra to the Olenek. We likewise collected materials for a geological map and description of the country. We collected about 1500 palæontological specimens, at twenty-four different localities. Ceratites and inocerami are most numerously represented, but there are also several specimens new to the West Siberian fossil fauna, such as a mesozoic spirifer, *Orthoceras nautilus*, and remains of saurians. Our collection likewise contains vegetable remains, such as ferns, palm-leaves, and seaweeds. This collection cannot fail to prove useful in determining the age of the geological formations of Northern Siberia. There is no reason to suppose now that the carboniferous formation is represented on the Lena below Yakutsk. It proves, however, the existence of a formation yielding inocerami on the Lena, which appears to be identical with the formation discovered by Lopatin on the Yenisei. The remains of continental plants discovered by us will, no doubt, prove useful in elucidating the geological connection between the carboniferous

formations explored by me in the far north and the mesozoic carboniferous strata in the interior of the continent. Mountain limestone does not occur between Olekminsk and Yakutsk, for the limestone found there is of the same age as the red sandstones in the districts of Nishnaya Udinsk, Balagansk, Verkholensk and Kirensk, or the red and variegated sandstones near the sources of the Lower Tunguska,* which appear to be of Devonian age.

Our botanical collection includes 3000 specimens, and the entomological collection, for which we are indebted mainly to my companion, M. Venglovski, includes 7000 specimens, many of which were found on the northern tundra.

THE ARCTIC EXPEDITION.

VIII.

THE BATTLE FOUGHT, AND THE VICTORY WON.

THE most successful Arctic Expedition that ever left the shores of England has returned safely, after achieving an amount of valuable work such as has never been equalled, in the face of the most appalling hardships and difficulties.

The success is absolutely complete; and all that not only can be done, but that real geographers ever wished to be done, has been achieved in the direction of Smith Sound; which is the best route for approaching the unknown area.

Ignorant and sensational writers suppose that the object of a scientific Arctic Expedition is to reach a conventional sign called the North Pole; and there appears to be something which takes the imaginations of vulgar minds in the idea of standing upon it. But this was not the main or even a principal object of the Arctic Expedition. The objects in view were the exploration of as large an area as possible of the unknown region round the North Pole, by the best route by which the threshold of that unknown region can be approached, namely, that by Smith Sound; the discovery of the conditions of land and sea, and the investigation of the phenomena in various branches of science within that area. These objects have been fully and completely secured.

In attaining such results the Expedition of 1875-76 has excelled all others both in the work it has done, and as regards the hardships it faced and overcame. Commander Markham and Lieutenant Parr, with their gallant sledge crews, have been further north—nearer the Pole—than any other human beings. After almost superhuman efforts they reached 83° 20′ N. Before the memorable day when these gallant men thus won the palm, the highest latitude ever reached was that attained by Parry, 35 miles to the south, in 82° 45′ N., on July 23rd, 1827. Parry's achievement was unrivalled until Commander Markham passed beyond his furthest, nearly half-a-century afterwards. H.M.S. 'Alert' has been further north than any other vessel, namely, in 82° 28′ N. The 'Polaris' is alleged to have been in 82° 16′ N., but she was not really in so high a latitude by several miles. Next, but far behind, comes Captain Scoresby's vessel, which was in 81° 30′ N., in May 1806; the Swedish steamer 'Sophia' that reached 81° 42′ N., and Mr. Leigh Smith's yacht in 81° 24′ N. The 'Hecla,' with Sir Edward Parry, in 1827, attained to 81° 5′ N. The 'Alert' also wintered further north than any human beings had ever wintered before, in 82° 27′ N. The winter quarters of the 'Polaris' were only in 81° 38′ N., south of those of the 'Discovery' (81° 44′ N.). Consequently the officers and crew of the 'Alert' passed through the longest period of darkness, without seeing the sun, that has ever been faced by human beings, namely, 142 days. They also endured the most intense Arctic cold that has ever been registered, the temperature having been 59° below zero for thirteen consecutive days, and the lowest temperature having been 74° below zero.

But these were merely incidents in the execution of the great and important work to be done, noteworthy mainly as showing the extraordinary difficulties and perils of the undertaking.

Our last news of the Expedition was dated July 26th, 1875, when the 'Alert' and 'Discovery' left the Cary Islands, and proceeded north with an open sea, and fine weather.* They reached Littleton Island almost without seeing ice, and crossed from Port Foulke to Cape Isabella, on the west side of the entrance to Smith Sound, where Commander Markham landed and erected a cairn, on July 29th. Proceeding north they met and entered the ice at Cape Sabine, and from that time it was one long and continuous struggle with floes of tremendous thickness. Off Victoria Head the ship narrowly escaped being crushed to pieces between an iceberg and the pack; and there were no lanes of water of any extent until Cape Fraser was passed on the 19th of August. Depôt B was landed on the south side of Dobbin Bay. On the 22nd open water was reached almost like the "North Water" of Baffin's Bay, and Cape Constitution was passed within a few miles. If Morton saw a similar expanse he may be excused for his exaggeration about an open Polar Sea. Off Cape Morton they were again brought up by the pack extending right across Hall's Basin, solid floes of large area stretching to the north, as far as could be seen from the nest, with no indication of open water beyond. They anchored in Bessel's Bay until the 24th, when at length they reached Lady Franklin Bay on the opposite coast. Nothing but incessant vigilance, combined with most dauntless resolution and hardihood, could have overcome the obstacles to an advance. Captain Nares was in the crow's-nest day and night, exciting the admiration of officers and crews by his pluck and seamanship. It was only by his unceasing watchfulness that the 'Alert' succeeded in reaching the highest latitude in which a keel ever floated. He lived in the crow's-nest for days and nights. The description of the navigation up Smith Sound, graphically but simply told by the leader of the Expedition, will not be the least interesting part of the narrative of this memorable undertaking. At length they reached the northern shore of Lady Franklin Bay, and the 'Discovery' was safely established in excellent winter-quarters between Bellot Isle and the mainland, in 81° 44′ N. latitude. It was here that the first musk oxen were

* I am informed that M. Dupont, the Belgian geologist, has discovered in my collection several specimens which are identical with the Devonian species of Belgium.

* See *Geographical Magazine* for November 1875, p. 327. "The Arctic Expedition. III. Latest News and Future Proceedings."

seen and shot. The 'Alert' then pressed onward to the north on the morning of August 26th, taking on board Lieutenant Rawson and seven men of the 'Discovery.' They now encountered ice of a totally different description, the floes being 40 to 80 and 100 feet in thickness; and, the rudder being seriously damaged, the old ship was made fast to some grounded hummocks in order to shift it. On the 1st of September, off Cape Lincoln, a strong southerly wind opened a channel from one to three miles wide, and the 'Alert' bowled along ten knots before a fresh gale. At noon in 82° 20′ N. they hoisted the white ensign on board a British man-of-war in a higher northern latitude than ever colours had been displayed of any nation: but at one p.m. they reached the edge of an impenetrable pack, after rounding Cape Union in 82° 15′ N. Thus they completed the passage through Robeson Channel, and entered the great Polar Ocean, and on September 3rd, 1875, the 'Alert' reached her winter-quarters off the open coast, facing the Polar pack, in 82° 27′ N. She was secured inside a chain of grounded hummocks, solid masses of ice from 20 to 50 feet high, about a cable's length from the shore. A depôt of 2400 rations was landed, and the remainder of the casks and cases formed the sides of a capacious house 38 feet long by 12 wide, named "Markham Hall." Inside was stored all the spare sails, stores and provisions, including sledges and sledge-gear. Here the winter was passed, the severest ever encountered in the Arctic Regions. The most perfect harmony prevailed; the Royal Arctic Theatre was opened with prodigious success, and other amusements as well as instruction were provided, while scientific observations were carefully and regularly taken. Up to this time there was no illness on board the 'Alert,' but the long winter had told upon the men; and the sledge travelling was attended with unparalleled suffering. Lieutenant Rawson, of the 'Discovery,' wintered in the 'Alert' with a sledge crew, to open communication with his own ship early in the spring, and during the autumn depôts were laid out as far as Cape Joseph Henry in 82° 50′ N. This autumn travelling involved work of intense severity.

On the 25th Commander Markham left the ship with three sledges, accompanied by Lieutenants Parr and May, and victualled for twenty days, and established a large depôt at Cape Joseph Henry, returning to the ship on October 15th. Lieutenant Aldrich had preceded them. The travelling was exceedingly heavy and the fall of snow enormous, the snow being up to their knees and frequently up to their waists, and the dragging, of course, most laborious. A sudden fall of temperature was disastrous, and out of the party of twenty-four, as many as twelve were severely frost-bitten, Lieutenant May and two others suffering amputation. During this journey Commander Markham and Lieutenants Aldrich, Parr, and May wrested from Parry his hard-earned and long-maintained laurels, having advanced their sledges as far as 82° 48′ N. The sun disappeared on the 11th of November, and reappeared on the 29th of February, after an absence of 142 days.

With the thermometer more than 40° below zero, Lieutenants Rawson and Egerton started to open communication with the 'Discovery,' on the 12th of March, accompanied by Neil Petersen, the dog-driver, who was fatally frost-bitten. The amputation of both feet became necessary, and the poor fellow died on the 14th of May. On this occasion the conduct of Rawson and Egerton was above all praise, and their energy and devotion preserved poor Petersen's life until they reached the ship. Neils Christian Petersen was a cooper in the service of the Danish Greenland Company, and had served as dog-driver in the expedition of Dr. Hayes to Smith Sound in 1860. He leaves a wife and three children at Copenhagen to mourn his loss.

The spring travelling was organised in three main divisions, under Markham, Aldrich, and Beaumont. Commander Markham, accompanied by Lieutenant Parr, with two sledges, was to push due north from Cape Joseph Henry. Lieutenant Aldrich, assisted by Lieutenant Giffard, was to explore the shores of the Polar Ocean as far as possible to the westward. Lieutenant Beaumont, aided by Lieutenant Rawson and Dr. Coppinger, was to make discoveries along the north coast of Greenland.

The travelling parties left the ship in the intense cold of the 3rd of April, in all seven sledges, commanded respectively by Commander Markham, Lieutenants Aldrich, Parr, and Giffard, Dr. Moss, and Mr. White. They were all to keep company as far as Cape Joseph Henry, whence Moss and White, having filled up the other sledges, returned to the ship. Commander Markham and Lieutenant Parr's sledges were completed to 70 days' provisions, and their force consisted of 15 picked men. It was a glorious sight, on that morning of the 3rd of April, to see the seven sledges drawn up in line with their banners flying bravely out before the breeze over 53 as fine fellows as could be found in the navy, full of zeal and enthusiasm, and eager to make a start. Alas! how different was the return. On reaching Cape Joseph Henry, a distance of 70 miles, Commander Markham's party struck due north into the Polar pack. An interminable field of thick-ribbed ice, the same as that which presses on the western shores of Banks and Prince Patrick Islands, extends as far as the eye can reach from the loftiest hills of Grant Land, with no sign of land to the northward, and with evidence that there is never any considerable movement and that the Polar Ocean is never navigable. The ice of this Polar Ocean is upwards of 100 feet thick, and the surface is broken up into a succession of lofty ridges, so that travelling is almost impossible.

On the 11th of April Markham and Parr pushed straight out on the pack. The road lay entirely through heavy hummocks and deep snowdrifts, and the men were employed in *road-making* for the greater part of each day, cutting and hewing a road with pickaxes through hummocks from 50 yards to a quarter of a mile wide and 30 feet high. Progress could only be effected by making the road, and by dragging the sledges over the huge masses of ice by a succession of standing pulls, and even so the advance was only at the rate of two miles to a mile a-day; yet they were on the march for ten and twelve working hours. The fearful labour made any considerable advance impossible, and over and above the unparalleled difficulties of the enterprise, scurvy broke out among the sledge crews on the tenth day. Before three weeks had elapsed two men were disabled and had to be carried on the sledges. On the thirty-fifth day out there were five men on the sledges. Laden as they were

with sick men, they had to traverse the same ground five times, dragging up the sledges one by one, with the thermometer often at — 45°. Still Markham and Parr pressed on, and at length they arrived at the latitude of 83° 20′ 26″, by a good meridian altitude, the most northern point ever reached by man on this earth. Commander Markham obtained soundings through a crack in the ice, and found a depth of 72 fathoms. The return journey was even more trying, as the men were every day becoming more debilitated, and one poor fellow, a gunner of marine artillery, named George Porter, was evidently sinking. The sufferings and privations of this terrible journey, and of the others, must be described in detail before any adequate idea can be formed of the work that had to be done to secure the results by which science will be the gainer, and of the heroism of those who performed it. On arriving at Cape Joseph Henry, on their return, on the 5th of June, the poor scurvy-stricken party was in such a condition that, unless succour speedily reached them, they could never have arrived at the ship. Markham and Parr were the only two fit to undertake a long journey. Markham could not leave his men, so Parr nobly volunteered to push on and reach the ship. He did so after a walk of twenty-two hours without stopping, and, on coming on board, was hardly able to stand or speak from exhaustion. Meanwhile Porter, the marine artilleryman, had died on the sledge. He was a strong man, a native of Birmingham, aged about 27, and fortunately unmarried. The survivors at length arrived on board on the 14th of June, after an absence of seventy-two days. When succour came to them, only three men and the commander himself were able to work at the drag ropes. What a contrast was their return to their departure! Out of the Commander's party of fifteen, one poor fellow was no more, eleven were carried alongside the ship on sledges. The actual distance marched was 600 miles; but what miles! The three men who were still able to drag were John R. Radmore, the chief carpenter's mate; William Maskell, a young seaman, aged 22; and Thomas Jolliffe, the captain of the maintop. Three others were just able to struggle on with the help of alpenstocks, namely, Edward Lawrence, captain of the forecastle; Daniel Harley, captain of the foretop, aged 26, who was born at Madras; and George Winstone, a Gloucestershire lad, aged 20, nephew of Good, the chief boatswain's mate. The rest were unable to move, and were on the sledges.

Meanwhile, Lieutenant Aldrich had pushed to the westward, along the land, making very important discoveries. The most northern point of land in latitude 83° 7′ N. was named Cape Colombia, and the coast then trends to the south of west. It was explored by Aldrich for a distance of 220 miles, his furthest point being in 86° 30′ W. longitude, and 82° 10′ N. latitude. His party was also attacked by scurvy, and the men owed the preservation of their lives to the fortitude, energy, and presence of mind of their leader. They arrived in as exhausted a state as Commander Markham's brave fellows, and were even longer absent from the ship. Aldrich himself, and Adam Ayles, a forecastleman, from Dorsetshire, were alone able to be in the drag ropes when succour reached the party.

The main travelling party from the 'Discovery' was commanded by Lieutenant Beaumont, with Lieutenant Rawson as his zealous and most efficient assistant. After crossing Robeson Channel the party worked its way along the north coast of Greenland, Lieutenant Beaumont's furthest point to the eastward being in 48° 33′ W. longitude and 82° 54′ N. latitude, when the land was beginning to trend south towards Cape Bismarck. On the return journey the party suffered most severely, and received opportune succour from Dr. Coppinger, who distinguished himself as an Arctic traveller. Nevertheless two fine young men died, falling victims to the severity of the work. One was named James Hand. The other was Charles Paul, a native of Devonport, who had volunteered from the 'Valorous.' When Rawson and Coppinger met Beaumont, his party was utterly exhausted, and the three officers had to drag the sledge.

While the extended parties were away, much useful work was done nearer the ships. Lieutenant Archer explored the Lady Franklin Inlet, which turned out to be a bay about sixty miles deep. Lieutenant Fulford went across to Hall's winter-quarters, where the depôt proved to be useful, and where a memorial tablet was erected to the memory of the brave and true-hearted American explorer. He and Dr. Coppinger also explored Petermann's Fiord. Lieutenant May, notwithstanding the serious accident of the autumn, and Lieutenants Egerton and Conybeare, did most useful work in laying out depôts and bringing succour to the returning parties, and Captain Feilden was indefatigable both in giving assistance to the shorter parties, and in making natural history collections. Mr. White and Mr. Mitchell were most successful as photographers, and have completed an admirable series. The hunters of the 'Alert' were fortunate enough to shoot six musk oxen, on which, with all the geese, ducks, and hares that were obtained, the sick began to thrive—thanks also to the unwearied attention and kindness, as well as to the great skill, of Dr. Colan.

On the return of the extended parties, Captain Nares was able to review the work that had been achieved, and he found that the terrible sufferings his people had endured, the dangers and hardships they had faced and overcome, the losses they had to mourn, were not in vain. In one season the results thus manfully obtained had secured full and complete success.

The character of the great frozen Polar Ocean had been ascertained, and the observations relating to it are most important to the science of hydrography. A coast line extending for fifty degrees of longitude along the Polar Ocean has been discovered and explored. The geology of the whole of the newly discovered region, as well as of the country from Cape Isabella to Cape Union, was ascertained, and large collections of fossils and rocks were made. It was found that the coal, showing the existence of an evergreen forest on the Island of Disco, extended at least as far as 81° 44′ N. Corals, probably of the carboniferous period, were met with still further north, and the evidence respecting the rise of the land will explain many phenomena in Arctic geology which have hitherto been puzzling. A most complete collection of the flora and fauna of the newly discovered region has been made, including the inhabitants of the Polar Ocean, and careful observations have been recorded on the migrations and distribution of animal life. Commander Markham brought up several crustaceans

in 72 fathoms, in latitude 83° 20′ N. The series of meteorological, tidal, magnetic and electric observations is most complete, and observations were also taken for spectrum analysis. With the exception of the pendulum observations, which were rendered useless by the effect of the extreme cold on the clock, the expedition returns with full and complete sets of observations, taken at two different stations, in every branch of science to which the attention of the officers was called. The accurate delineation of coast lines, both in the long channel from Smith Sound to the Polar Ocean, and along the northern coasts of Grant Land and Greenland, comprise most important additions to geographical knowledge.

Thus the success of the Expedition was thorough and complete when Captain Nares broke out of his winter quarters on the 29th of July, 1876, and proceeded homewards. The 'Discovery' joined company, after taking Lieutenant Beaumont and his party on board. As on the passage up, so on the passage down Smith Sound, the two vessels had to fight against the ice for each inch of progress, and so advanced was the season that a second winter was fully anticipated. At length, on September 9th, the two vessels once more passed the portals of Smith Sound. They touched at Disco to receive letters and newspapers which had been sent from Copenhagen (by a Danish brig that sailed on the 28th of June), and at Egedesminde, obtaining coals at both places. Leaving Godhavn on the 28th of September, the 'Alert,' after a very rough passage across the Atlantic, arrived at Valentia on the 27th of October, going thence to Queenstown on the 29th, and the 'Discovery' arrived at Queenstown on the same day. The Expedition sailed for Portsmouth on the 30th of October.

Well and nobly have these brave men, officers and crews, performed the duty that was assigned to them. No work could be found more difficult, requiring so many high and rare qualifications, and entailing such terrible hardships and privations. No body of men could have done the work more ably, more zealously, and with more resolute pluck and endurance. In all their unparalleled sufferings not a single complaint was ever heard. Most perfect harmony prevailed in both ships, discipline was preserved, and every soul was animated with the determination that the expedition should succeed. Thus their country will add a very noble page, of which every true Englishman may well be proud, to her naval annals. The Arctic Expedition of 1875-76, though no better fitted out than several that went before, and weaker as regards the number of men, has achieved the most extensive and valuable results, and has been the most successful Expedition that ever went forth to make discoveries within the frozen zone. The gallant Arctic heroes will receive such a welcome from their countrymen as will show them that their memorable services and complete success are fully and gratefully appreciated.

Nothing but the perusal of the narratives themselves can convey even a faint idea of what has been achieved, and of the heroism of those who faced and overcame such difficulties. We earnestly trust that the Admiralty will give orders for the publication, at once, of Captain Nares's report as written on the spot, together with the narratives of Commander Markham, and Lieutenants Aldrich and Beaumont, while away on their sledge-travelling expeditions.

Reviews.

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SIR DOUGLAS FORSYTH'S MISSION TO KASHGAR IN 1873.*

THE results of Sir Douglas Forsyth's Mission to Kashgar in 1873 were published in a quarto volume of 573 pages, profusely illustrated, in 1875; having been printed at the Foreign Department Press at Calcutta.

These results, as regards the collection of geographical and other valuable information, are most important. The Mission was accompanied by a geologist and a surveyor; much new and interesting country was explored and mapped for the first time, and materials were collected which, in the interests not only of India, but of the whole civilised world, ought to have been promptly disseminated.

The Report opens with a brief narrative of the progress of the mission to Kashgar and back to India; which is followed by a general description of the dominions of the Atalik Ghazi, of its physical features, political divisions, and accounts of its population, climate, natural and industrial productions, of the manners and customs of the people, the administration and government. This portion is the joint work of Dr. Bellew and Captain Chapman, and it is followed by a history of Kashgar compiled by Dr. Bellew.

The name of the territory of the Atalik Ghazi in use among the English is now Kashgar or Kashgaria. The Russians call it Yatty-Shahr, or "the seven cities," a name derived from the people of Kokand and Bokhara, with reference to the seven cities to which the Chinese Government conceded certain privileges of trade and local government. Its northern boundary is the Tian-shan Mountains, its southern is formed by the Kuen-lun and Karakorum ranges, to the east its limit is the shifting sand of the Gobi Desert, and the eastern slopes of the Pamir plateau bound it on the west. These natural geographical boundaries closely correspond with the political limits of the country; the inclosed area being about a thousand miles from north to south, and five hundred from east to west, and covering 243,750 square miles, the greater part of which is uninhabited waste.

In the days of Chinese supremacy, the country north of the Tian-shan Mountains was called *Tian-shan Peh Lu*, or "the way north of the Celestial Mountains," and by the Mongols Zunghar, whence the Zungharia of European writers. The country to the south was called *Tian-shan Nan Lu*, or "the way south of the Celestial Mountains," or Kashgar, whence Kashgaria.

The river valleys are the seats of the fixed population and of the productive industry of the country. They all converge to form four main streams, namely, the Khutan, the Yarkand, the Kashgar, and the Aksu Rivers, which unite and form the Tarim River, to the south of Aksu. None are navigable, but they are all used largely for irrigation.

The desert is a vast undulating plain of sand,

* *Report of a Mission to Yarkand in 1873, under command of Sir T. D. Forsyth, K.C.S.I., C.B., Bengal Civil Service:* with historical and geographical information regarding the possessions of the Ameer of Yarkand. Calcutta, printed at the Foreign Department Press, 1875. Price, Rs. 25.

sloping gradually to the eastward, through which the rivers flow. The banks are fringed by thickets, in which lurk the tiger, leopard, lynx, and wolf, together with wild pigs, and a species of stag finds pasture on the outer skirts. Further on, in the desert to the eastward, the River Tarim spreads over the surface, forming lagoons and marshes, and again flows in a clear channel until it finally falls into Lake Lob. Unfortunately no member of the mission succeeded in reaching this very important geographical point—the lake which receives the whole of the drainage of this great inland river basin. Dr. Bellew gives an interesting description of the process by which the desert gradually encroaches on the fertile tracts, a process exactly similar to that by which the half-moon shaped sandhills are formed in the deserts on the west coast of South America. The sand has already buried the ancient cities of Lob and Katak, and Dr. Bellew made a careful investigation of the phenomena connected with this overwhelming of cultivated and inhabited sites by the shifting sand, and gives some data for calculating the rate of progress.

The Lake of Lob, the recipient of the drainage of Kashgaria, is described as situated on the edge of the Gobi Desert, at the extreme eastern limit of the Plain of Kashgar. Dr. Bellew's informants at Kashgar said that Lob was a succession of lakes along the Tarim River, fringed by reedy marshes, and forests of tamarisk and poplar. Tigers and wild pigs abound in the thickets.

The political or administrative divisions of Kashgaria are determined by the natural features of the country, being separated from each other by strips of intervening arid desert waste, so that each within itself forms a little State, with its capital, district towns, and rural settlements, the position and extent of which are dependent on the course and distribution of the water supply. Each little State also has its own peculiarities of dialect, dress, and social customs. These provinces are Khotan, Yarkand, Yangi-Hissar, Kashgar, Ush Turfan, Aksu, Kucha, Kurla, Karashahr, and Turfan. Dr. Bellew gives a detailed account of each of these districts, with all the statistics he was able to collect.

Khotan is at the northern base of the Kuen-lun mountains, and includes the deep valleys which drain its slopes into the river on which the capital stands, and the district is famous for its musk, its silk, its gold, and its jade. Ilchi or Khotan, the capital, contains 6,000 houses within the walls. The total population of the State is reckoned at 129,500 souls. Yarkand is the most populous and extensive of all the States of Kashgaria. Its capital stands on an open plain, and is surrounded by populous suburbs. The population of Yarkand is about 40,000, the principal industry being the leather trade. North-west of Yarkand is the district of Yangi-Hissar, a flourishing and populous settlement along the banks of the River Shahnaz. Kashgar State contains about 112,000 souls or 16,000 houses, of which 6,000 houses form the city of Kashgar. This city was founded in 1513 by Mirza Abubekr. North-east of Kashgar is a small division called Ush-Turfan, and beyond it is the division of Aksu, at the base of the Alatagh, and at the southern entrance of the Muzart Pass leading to Kulja. Eastward of Aksu are the divisions of Kucha, Kula, and Karashahr; and the easternmost division is Turfan, on the borders of the Desert of Gobi. Dr. Bellew gives statistics respecting these divisions, as regards population, climate, and productions.

Dr. Bellew's history of Kashgaria is compiled from Beal's *Fa-Hian*, Malcolm's *Persia*, Remusat's *Khoten*, Yule's *Cathay and the road thither*, Michell's *Russians in Central Asia*, Vambery's *Bokhara*, Williams' *Middle Kingdom*, Romanoffski's *Turkistan*, *Ali of Yazd*, *Mirkhoud*, *The Tabakat-i-Nasri*, and three other Persian works, and from personal inquiry. The narrative of the events which led to the rise of the present Amir Yakub is particularly interesting.

By far the most permanently valuable results of Sir Douglas Forsyth's mission, were, however, the geographical observations and discoveries made by Captain Trotter. It was a fortunate decision that resulted in the appointment of an officer of the Great Trigonometrical Survey of India to accompany the mission, and no better selection could have been made for the post than that of Captain Henry Trotter, of the Royal Engineers, who had already done admirable work in the survey of Kattywar. He provided himself with a six-inch transit theodolite as his mainstay for astronomical observations, a six-inch Troughton and Simms' sextant, artificial horizons, a small light theodolite, a plane table, prismatic compasses, pocket chronometers, three mercurial mountain barometers, and numerous aneroids and thermometers. Two of the old Pundits belonging to the department were attached to him as part of his staff, in the hope that they might be despatched through Tibet to Hindustan. After leaving Leh, Captain Trotter, with Dr. Stoliczka the geologist, proceeded to Shahidula, the first post within the territory of Kashgar, by way of Changchenmo. Throughout the march he made astronomical observations, but his most valuable work on this part of his route was a determination of the depth of the Pangong Lake, ascertained by a series of soundings. For this purpose he had provided himself with an india-rubber boat, and a fishing line carefully measured and marked. The soundings gave 142 feet as the greatest depth. Captain Trotter also made a short excursion up the Karakash in search of a new road. In his report he gives an excellent description of the routes between Ladak and Turkistan, namely, the Karakorum routes leading to Yarkand, the Changchenmo routes leading to Yarkand and Khotan, and the Rudok route leading to Khotan. The shortest route from Leh to Yarkand is by the Karakorum Pass, a distance of 445 miles.

From Kashgar Captain Trotter made two excursions, both of which enabled him to add to our geographical knowledge. During the first he visited the Russian frontier at Lake Chadyr Kul, 110 miles N.W. by N. of Kashgar, which is 11,300 feet above the sea. His second trip was to the north-east of Kashgar, to the Artysh district, and in the direction of Ush Turfan. The ground traversed, on these occasions, is entirely new to geographical science.

But Captain Trotter's most important work, and that by which he has established for himself a place in the foremost rank of English geographers, was his survey of Wakhan and a portion of the Pamir Steppes. He went to Wakhan, through Tashkurghan and the Little Pamir, returning by the Great Pamir Road, which Wood followed in 1838 as far as the west end of Lake Victoria; and from that point he traversed a

road which has never before been surveyed or described. His observations enabled him to lay down these routes with great precision, and an account of them will be found in our number for September, 1875, page 259. His assistant, Munshi Abdul Luthan, followed the Oxus for a distance of a hundred miles to the frontier of Kulab, fixing the positions of the chief towns of Shighnan and Roshan.

The geographical work of Captain Trotter did not end with his return from the Kashgar Mission. On coming back to the head-quarters of the Great Trigonometrical Survey he proceeded to reduce the observations of three native explorers, and to construct maps showing their discoveries. The first of these was the Havildar, who crossed the Hindu Kush, by the Saralong Pass, and went thence, by Faizabad in Badakshan, down to the Oxus at Kila Wamar, and then, crossing that river, proceeded up its course, visiting Kila Khumb, the capital of Darwaz, and extending his journey to Yazghulam, a point within a long day's march of the point (Pigish) reached by the Munshi sent by Captain Trotter from Wakhan. Besides his important geographical discoveries, the Havildar went to two places at least north of the Oxus, the positions of which were fixed by the Russians during their Hissar expedition (see our number for November, 1875, page 334). Thus the Russian and English work is again tied together here, as it was by Captain Trotter, north of Kashgar. The second native explorer, known as the "Mullah," made his way up the Kunar valley from Jalalabad in Afghanistan, crossed the Baroghil Pass, at the head of the Chitral valley, and going thence to Yarkand and Ladak. The third explorer was the Pundit, Nain Sing, whose remarkable journey through Tibet is described in our number for June 1876, page 145. The map given in that number, showing the Tibetan discoveries, is by Captain Trotter.

Besides reducing the observations, and constructing the maps showing the routes of the Havildar, the Mullah and the Pundit, Captain Trotter prepared interesting narratives of their travels, which, however, have been withheld from publication. It is believed that the maps may be obtained at Calcutta, but the reports are still inaccessible.

Nevertheless, the thanks of geographers are due to Colonel Walker, the Superintendent of the Great Trigonometrical Survey, for the energy and judgment with which he conceived and superintended these explorations, and to Captain Trotter for his own invaluable labours in Kashgaria and on the Pamir, and for the admirable way in which he has utilised the work of the native explorers. But the Report of the Superintendent of the Great Trigonometrical Survey for 1874-75 has, from some unexplained motive, been divested of its most interesting section, that on exploration beyond the frontiers of India, a section which has for many years made previous reports so valuable to geographers of all countries.

GERMAN EXPEDITION TO SIBERIA.—Dr. Finsch has sent the following telegram from Tobolsk, on the 6th October:—"Arrived safely at Samarof by steamer. Ascended the Tchuchya by lotka. Penetrated to the foot of the Podarata. Compelled to return when in sight of Sea of Kara. Sea marshy, unsuitable for navigation. Extensive narratives: rich collections: speedy return home."

AUGUSTUS RAYMOND MARGARY.*

THE narrative of the lamented Margary's adventurous journey through China would, under any circumstances, have been read with great interest; and that interest is deepened by the tragic end of the traveller just as he seemed to have attained his goal. Sir Rutherford Alcock—and no one could be better qualified—has compiled this narrative from Margary's journal and the letters he sent home during his journey; occasionally we find some confusion between the two, the same events recorded and the same observations made twice over, both in the journal and the letters; this may have been difficult to avoid, but it is at times perplexing. The editor has prefaced his work with a short biography.

Augustus Raymond Margary, third son of Major-General Margary, was born in 1846, and in his childhood gave promise of what he was afterwards to become. The account of him at Brighton College is that of a boy with whom his master never had occasion to find fault, diligent, full of consideration for others, watchful over his younger brothers, tender-hearted and full of animal spirits. His own wish was for a university career, but having received a nomination to compete for a student-interpretership in China, he gave up his own choice, and availed himself of the offer. The system of competitive examinations all but deprived the service of a valuable officer—three times he failed, in the fourth he was successful, and set out for China, March 1867.

In August 1874 Margary received notice of his appointment to cross China and meet the British Mission, sent from Burmah, under Col. Brown, to investigate, with a view to reopening, the great trade routes between India and China, and conduct the mission back to Shanghae. The previous mission of Major Sladen, in 1868, had failed, and the prospects of this one were in some respects even less favourable; yet the capacity and perseverance, the courage and endurance of Margary had almost brought it to a successful issue, when he was cut off by barbarians, whether instigated by the Chinese Government or not we have yet to learn. Sir Rutherford, taking all Margary's experiences together, considers that the impression left is decidedly to the advantage of the Pekin Government, so far as the *bonâ fides* of the safe conduct given by it to Margery is concerned. He left Shanghae, August 23rd, and ascended the Yang-tsze-kiang as far as Hankow in one of the large American steamers, which perform a daily service up and down 700 miles of that great river, which only a few years before was hermetically sealed. Margary's real toil began when he reached Hankow, September 4th. Here, as he says, he plunged into darkness. He proceeded in a native boat up the river as far as Ch'en-yuan fu, and from thence in a chair to the Burmese frontier. He was suffering from the effects of an intermittent fever caught at Shanghae; this was followed by dysentery and acute rheumatism; but no weakness or suffering damped his ardour; and after leaving the unhealthy province of Hu-nan, and

* *The Journey of Augustus Raymond Margary from Shanghae to Bhamò, and back to Manwyne.* From his journals and letters, with a brief biographical preface; to which is added a concluding chapter, by Sir Rutherford Alcock, K.C.B. London: Macmillan & Co., 1876.

as he entered a more elevated region, he gradually regained his strength. Ch'en-yuan was reached October 27th, and on the 17th of January he met Colonel Brown at Bhamó. Margary's descriptions of the country and people are graphic, and calculated in many respects to alter the commonly received ideas of China and the Chinese. Instead of a country in the highest state of cultivation, and teeming with population, he finds the two provinces of Kwei-chou and Yun-nan desolated, the villages and many towns in ruins, the fields for the most part uncultivated, the roads or rather tracks almost impassable, the people miserably poor; indeed, all through China he often insists on their poverty. The more eastern provinces still show the results of the Taiping rebellion. Of the Chinese military officers Margary forms a higher opinion than is generally received amongst us, and the completeness with which the army put down the Muhammadan rebellion in the west is evidence of considerable military vigour.

Margary was furnished with passports from the Pekin Government, and on the whole, though with some exceptions, met with assistance and great attention from the Chinese authorities, especially in the latter part of his journey, which he describes in one letter as "quite a royal progress." The mandarins often knelt to him, and the Viceroy of Yun-nan deputed two mandarins to accompany him, one a civilian, the other a soldier—"a middle-aged man with a very dark visage, well tanned by military service and exposure," but "with an agreeable manner and kindly disposition." These two gentlemen seem to have performed their duty very thoroughly. Desolated as Yun-nan is, there is a native bank at the capital; and a system of inland postage enabled Margary to write home frequently, and we find no mention of letters miscarrying. Early in February the mission left Bhamó; on arriving at the frontier of Burmah and China rumours reached the party of opposition to their progress. Margary gallantly volunteered to go on ahead and ascertain the truth. He crossed the frontier on the 19th, with no escort but his Chinese attendants. On the 21st or 22nd he was murdered at Manwyne. It is easy to be wise after the event; but it is impossible not to wonder that his companions consented to his going on alone. Doubtless, he himself made light of any danger, and presumed on the safety in which he had previously traversed the same route.

The editor concludes the book with a very valuable chapter on the missions of Major Sladen and Colonel Brown, which we wish we had space left to notice more at length. He expresses serious doubts of the value of any trade route between China and Burmah. He considers that there are grave difficulties in the way of any project for establishing consulates or British communities in the far interior of China; and dwells on the fact that "our reputation in the East takes its complexion from our conquests and progress in India, the history of which, in broad outline at least, is perfectly well known in China, if not over all Asia. How we began by asking for a privilege to trade, and ended by annexing provinces after disastrous wars, is no secret." According to Sir Rutherford, we must be content to trade and to negociate weighted with this heavy burden of distrust and suspicion.

BRAZIL.*

THIS book contains a useful abstract of the statistics of the empire of Brazil, in the different departments. It commences, quite correctly, with a description of the physical features, and a notice of the population. Then follows an account of the Constitution, of the political divisions, and of the various branches of administration. The measurements are given in kilometres. In the first section there is an enumeration of the surveys of the different navigable rivers, with notices of the work of the naval officers and engineers who were employed on them, which is useful. There is also a good, though incomplete, list of economic plants.

The census of the empire has not yet been completed, but it is believed that its final result will give a population of 12,000,000 souls to Brazil, including 2,000,000 wild Indians, and 1,476,567 slaves. By a law of 1871 no more slaves are born in Brazil; and nearly 64,000 negroes have been born free by virtue of this law. Very complete statistics are also given of the agricultural and manufacturing industries, the railroads, lighthouses, and other public works.

This official account of Brazil has appeared opportunely, and henceforth the blunders that occur in geographical and other compilations in this country will, as regards the South American empire, be quite inexcusable.

CENTRAL AFRICA; NAKED TRUTHS OF NAKED PEOPLE. By *Colonel C. C. Long*. London (Sampson Low & Co.). 1876.

THE efforts made by the Khedive of Egypt, during the last few years, to subjugate and civilise the most southern portion of his dominions have helped to shed considerable light on the narrowing though still extensive field for geographical research in Central Africa. The expeditions of both Sir Samuel Baker and Colonel Gordon, supplemented by the work of Livingstone, Cameron, and Stanley to the south, are gradually revealing to us the exact nature of the hydrography of the lake region clustering around the head waters of the Nile. Indeed, it could not well have been otherwise; for, although, as Colonel Gordon truly remarked at the outset, the object of his expedition was civilisation and not geography, it is obvious that no real hold on a country could be obtained unless its general configuration and topographical features were first ascertained. Colonel Long, who was a member of Colonel Gordon's expedition, was attached to it in his military capacity, and not on account of any scientific acquirements. Being, however, a man of observation and culture, he has been enabled to present us with a work which is of value in making known to us the customs and idiosyncrasies of the people, while it chronicles the geographical discovery by its author of Lake Ibrahim, a species of reservoir formed by the Nile, about half-way in its course between Lakes Albert and Victoria. The route travelled by Colonel Long lay westward of the Bahr-el-Gebel, and extended southward as far as Lake Victoria, which he claims to have been the first white man to have embarked upon. This is an important mistake, which is made still more serious by the remark (p. 140) that neither Speke nor Grant had ever visited the lake. As a matter of fact, Speke's account records most positively that he both visited and embarked on

* *The Empire of Brazil at the Universal Exhibition of 1876 at Philadelphia.* (Rio de Janeiro, 1876.)

Lake Victoria. An interesting excursion was subsequently made by Colonel Long to the Niam Niam country, respecting which Schweinfurth has already told us so much. Long's researches in this direction extended to the Zilei mountains, from whence may be descried Gebel-Baginsi, the south easternmost point of Schweinfurth's route.

The chief value of Colonel Long's book undoubtedly lies in the information it affords respecting the manners and customs of the savage nations he came across, and the resources of the countries traversed; its geographical interest being of secondary rank. It is, however, welcome from another point of view, as tending to bring into light the full history of the opening up of Equatorial Africa, a task which, in our opinion, ought properly to be undertaken by national expeditions, such as Colonel Gordon's, and not left to the mercy of irresponsible private travellers, whose rash indifference to human life will inevitably lead to the frustration of the very object in view.

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TABLES OF THE TEMPERATURES OF THE SEA AT DIFFERENT DEPTHS BENEATH THE SURFACE, reduced and collated from the various observations made between the years 1749 and 1868, discussed. With map and sections. By *Joseph Prestwich, M.A., F.R.S.* (*Philosophical Transactions.* Vol. 165, Part II.)

THIS valuable paper was read before the Royal Society in June 1874. Mr. Prestwich's intention in compiling it was to bring together all the observations in this field of inquiry which were made previous to Dr. Carpenter's voyage in the 'Lightning' in 1868. It shows the state of the question at the time of the 'Lightning' expedition. Mr. Prestwich gives a historical narrative of deep-sea observations from 1749 to 1868. They open with two experiments made by Captain Ellis in 1749, in a voyage to the coast of Africa, at depths of 3900 and 5346 feet, with an instrument invented by Dr. Hales. Then follow accounts of the experiments of Captain Cook in 1772, of Captain Phipps during the Arctic Expedition of 1773, of Saussure in the Mediterranean in 1780, of M. Peron in 1800, of Krusenstern in 1803, of Scoresby in the Arctic Seas, of Kotzebue, of Sir John Ross in Baffin's Bay, of Buchan and Parry, of Clavering and Sabine, of Fitz Roy and Dumont D'Urville, of James Ross in the Antarctic Seas, of Captain Spratt in the Mediterranean in 1845, of Sir E. Belcher, Kellett, Dayman, and Pullen, of the Novara Expedition, and of Dr. Wallich. Mr. Prestwich then discusses the relative merits of the methods employed by the early observers, and gives a summary of the observations. The paper is illustrated by a series of tables of submarine temperatures arranged according to latitudes, and by a plan-map of deep-sea temperature soundings from 1749 to 1868.

For all that has been done since 1868 Mr. Prestwich refers his readers to the exhaustive papers of Dr. Carpenter in the *Proceedings of the Royal Society*—vol. xvii., p. 168, for the 'Lightning' work; vol. xviii., p. 397, and vol. xix., p. 146, for that of the 'Porcupine,' and vol. xx., p. 535, for that of the 'Sheerwater.'

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THE INDIAN FORESTER. A Quarterly Mazagine of Forestry, edited by *W. Schlich, Ph. D.*, Conservator of Forests in Bengal. (Calcutta, July 1876. Vol. ii., No. 1.)

THIS number contains several very interesting articles. The first is on Forest Conservancy in its Popular Aspect, by Mr. Baden Powell. He shows the necessity for correct statistics being collected before there can be a really efficient system of conservancy. Data are needed of consumption of timber, small building wood, fuel, and brushwood per house; and the number of cattle, the gross yield of waste land and grazing grounds, and the quantity of land really needed for the yield of such grazing. There is another valuable article, by an officer signing himself *Kad-handi* ("Jungle-pig"?) on the suitability of the western ghaut forests, especially in the Nagar Division of Mysore, for the cultivation of the caoutchouc yielding *Castilloa elastica*.

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CULTURGESCHICHTE IN IHRER NATÜRLICHEN ENTWICKLUNG BIS ZUR GEGENWART. Von *F. von Hellwald.* 2te Ausg. Augsburg. (London, Trübner.)

WE have received the first part of a History of Civilisation, written by the accomplished editor of the *Ausland.* The author professes to have approached his subject without any foregone conclusions. He disclaims writing in the service of any political party whatever, his sole object being to arrive at the truth. He traces the development of civilisation guided by the teachings of Natural Science, and applies Darwin's theories to this branch of inquiry. The work is being published in twenty shilling parts, and on its completion we shall recur to the subject.

Cartography.

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MAJOR ST JOHN'S MAP OF PERSIA* constitutes a most valuable addition to our geographical knowledge of a considerable portion of Asia. Those who judge of the value of a map merely by the number of names it contains may perhaps be disappointed, for if they compare the present map with others of portions of Persia published previously, they will miss a good many names and a great deal of topographical detail. Major St. John is fully aware of the fact. In compiling his map he has accepted nothing for which there is not European testimony, and even some European travellers have evidently not been deemed worthy of credit. The routes obtained from natives have been omitted, and the map, therefore, exhibits solely the information derived from European sources. Native or doubtful information might perhaps have been inserted in hair-line, but we have no right to quarrel with the principles adopted by Major St. John. His map is certainly of the highest value; a vast amount of information has been embodied in it which now sees the light for the first time, and, as far as it goes, it may safely be used as a basis by future compilers. The price of publication—10*s.* 6*d.* for six sheets—places it within the reach of all, and the technical execution leaves nothing to be desired.

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WE have received from Messrs. Wurster and Co., of Zurich, a new ORO-HYDROGRAPHICAL MAP OF SWITZERLAND,† on a scale of 1 : 200,000. Rivers, lakes, and glaciers are printed in blue, the hills in brown. The latter are delineated in a masterly style, and the map would prove an ornament to any school-room. There are no names, but the publishers evidently propose to issue an edition giving the nomenclature. For pictorial effect, however, and for educational purposes, we far prefer the map as it is, for the names are sure to prove a disturbing element, and many physical features will be obliterated by them or rendered indistinct.

* Map of Persia, by Major O. B. St. John. Scale 16 m. to 1 inch. Published by order of H.M. Secretary of State for India. (Trübner and Co.) See, for a notice on the authorities consulted, *Geographical Magazine* for October 1876.

† Oro-Hydrographie der Schweiz. 6 sheets. Zürich (Wurster and Co.), 1876.

Log Book.

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Recognition of Cameron's Services by the Navy.—The presentation of the naval testimonial to Commander Cameron, C.B., at the United Service Institution, on October 24th, went off with great *éclat*. Sir James Sartorius, the Admiral of the Fleet and a Trafalgar hero, was in the chair, and the originator of the movement was Admiral Ommanney, C.B., the discoverer of the first traces ever found of Franklin's expedition. The testimonial was in the form of a chronometer, on which is the following inscription:—"A.D. 1876. Presented to Commander V. L. Cameron, R.N., C.B., by 360 naval officers of all grades, in token of their admiration of his great achievement in traversing tropical Africa from the Indian Ocean to the Atlantic."

Appointments to the Indian Marine Survey Department.—The two vacancies in this Department have been filled up by the appointments of Lieutenant W. H. Coombs, R.N., and Navigating Lieutenant Fascoe, R.N., who have studied surveying at Greenwich, and were highly recommended for their proficiency by Captain Johnson, the Instructor at the College. Lieutenant Coombs passed out of the 'Britannia' first of sixty-three, in July 1866, and served three years in the 'Endymion,' on the Mediterranean Station. From 1869 to 1871 he was in the 'Royal Alfred,' on the West Indian Station, when he passed for a lieutenant, and from 1874 to 1875 he was in the 'Monarch,' in the Channel Squadron. In February 1875 he was promoted to the rank of lieutenant, and he has since been studying at the College.

Mr. Thomas C. Pascoe entered the navy as a master's assistant, in 1862, and served until 1868 on board the 'Phœbe' and 'Racer,' in the Mediterranean. From 1868 to 1872 he served in the 'Orwell,' on the west coast of Ireland and in the North Sea, and from 1872 to 1875 in the Persian Gulf and East Indies in the 'Vulture.' In December 1874 he was promoted to the rank of Navigating Lieutenant, and joined the Naval College at Greenwich, where, in June 1876, he passed out, taking a first place in the examination in marine surveying.

The Abbe Desgodins on the limits of Tibet.—The *Bulletin* of the Paris Société de Géographie for September contains interesting extracts from a letter on Tibet written by the Abbé Desgodins to his brother, and dated June 1874. The Abbé, in describing the present and former limits of Tibet, says that they were much more extensive before the Chinese conquest, in about 1720, than they have been since. The territories of Bathang and Lythang were united to the government of Szechuan; and those of A-ten tze and Tchong-tien to Yun-nan. To the south the Abbé says that Tibet has lost Ladak, Sikkim, and also Bhutan. But this is not quite exact, for Sikkim and Bhutan are still independent, and to some extent under the authority of the Lhasa Government. The Abbé also tells us that the frontier of Tibet was extended in a north-east direction, in 1863-64, by the annexation of the Dégué country; and he anticipates that, owing to the weakness and venality of the mandarins sent to Lhasa, the provinces of Bathang and Lythang will, before long, be again brought under the government of the King of Lhasa. At present the boundary in this direction is between the villages of Pa-mou-tong, or Bom, to the east, and the village of Lanten, or Kin-cha-kiang, and the small river that passes by the town of Kiang ka.

The remarks of the Abbé respecting the orography of Tibet, and the course of the Brahmaputra, are very important, and will be given in full, in our next number.

The Rivers Ket and Chulym in Siberia were explored in 1875 by MM. Sidensner and J. A. Lopatin, by order of the "Ministry of Communications." M. Sidensner proposed to examine the question whether it would be possible to join the Ob and Yenisei by means of the Ket or Chulym. He examined the water-parting between the Ob and Yenisei, determined astronomical positions and altitudes, and found, like his predecessors, that the Chulym was not suited for the proposed junction, but that the Ket was. He traced the Ket to its source, crossed the water-parting, and descended the Kas to the Yenisei. M. J. A. Lopatin, in the meanwhile, explored the Chulym, which he descended in a boat for 900 versts, thus leaving 550 of the upper course of this river unexplored. At Korelka, his place of embarkation, the valley of the river is over 2 versts wide, and it grows wider in proportion as we proceed north. At two spots, however, it is hemmed in, viz., between the villages of Kurbatof and Barsuk, where the river makes its way for 30 versts through a chain of porphyritic mountains, and between Nasarof and the town of Achinsk, where the river winds for 250 versts through another chain, consisting of trap-rocks and granite. This chain separates the carboniferous formation in the south from the trias to the north.

The Reclamation of the Southern Zuyder Zee.—From Petermann's *Mittheilungen* for August, we take the following particulars respecting this most interesting project:—Since 1849 proposals to reclaim the whole of the Zuyder Zee have been frequently brought forward. These projects, however, omitted all consideration of the part played by the Issel, or northern arm of the Rhine, which, in the event of such a scheme being attempted, would have required fresh embankments for the whole of its course, from its new mouth in the German Ocean as far up as Zutphen. It was desirable also, for another reason, to limit operations to the southern half of the Zee, as a considerable portion of the northern half was occupied by sandbanks. Against this project, which emanated in 1866 from an engineer named J. A. Beyerinck and a member of the Chamber, T. J. Stieltjes, it was urged that the interests of navigation, especially as regarded North Holland, had not been sufficiently consulted, that the present riparian population would be ruined, that the advantages and the cost of the scheme were respectively overrated and underestimated. Nevertheless, in its essential points it is the scheme of these two gentlemen which it is now proposed to carry into effect. The outside dam or embankment will extend from the coast of Over-Issel, to the south of Shokland Isle, as far as Urk, where the chief sluice works will be erected, and from there to Enkhuizen, while the mouth of the chief navigation canal will be at Ven, where there is least danger

of silting-up taking place. The embankment will be 25 miles long, over 60 yards broad, and 22 feet high from its base.

In order to provide for navigation, in the interests especially of the people now living on the coast, a canal will be formed between Amsterdam and Muiden, at the mouth of the Vecht, and thence continued in a circuit round the present coast, past Nijkerk, Harderwijk, Elburg, and the mouth of the Issel. Another canal will be run along the present western edge of the Zuyder Zee, and connect Monnikendam, Edam, and Hoorn, with the first-named canal.

A commission of twelve experienced and independent men was selected to consider the whole question, and the report of the majority (there being three dissentients) was entirely favourable.

Besides the building of the main embankment and the strengthening of the embankment along the Issel to a point above Kampen, a canal 150 yards broad, with two reservoirs or basins at Enkhuizen and Urk, will be requisite in addition to the other canals, the chief ones of which have been specified above.

The cost of the undertaking has been estimated at 123,632,000 gulden (10,817,800 *D.*), and the amount of land to be reclaimed is about 176,000 hektars (434,720 acres), which is expected to realise the price of 1000 gulden (87*l.* 10*s.*) per hektar.

But even if this hope is not attained, then the Government will have an enormous interest in the success of the project. It will increase the area of the kingdom and provide an outlet for the increasing population. The present harbours will be secured against inundation and silting-up, and the moisture of the climate will be lessened. The time assigned by the States Commission for the accomplishment of this most important project is sixteen years.

A Census of Adrianople.—According to a census taken recently, there are in the Vilayet of Adrianople 3020 towns, villages, or hamlets, 303,139 dwelling houses, and 797,093 male inhabitants. Of these latter 278,846 are Muhammadans, 468,527 Greeks or Bulgarians, 8216 Jews, 8097 Armenians, 6072 Catholics, and 27,326 Gipsies; 22,700 Gipsies are said to be Muhammadans. The cultivated area covers 22,448,417 denyms, and the taxes produce 40,560,457 piasters annually, viz.: ground-tax, 14,164,234 piasters; other taxes paid by all Turkish subjects, 12,520,706 piasters; taxes paid by foreigners, 110,571 piasters; and the military tax paid by the Christians, 13,764,946 piasters.

Mr. E. Giles' Journey through West Australia.—Mr. Ernest Giles, known best for his discovery of Lake Amadeus in Central Australia, in 1872, has returned to South Australia, after having completed a transit of that portion of the continent lying between the Murchison River and the Overland Telegraph line. From the details which are to hand, Mr. Giles appears to have followed the valley of the Murchison as far as Mount Gould, thence to have struck north-east across the 24th parallel of latitude, and traced the Ashburton River to its sources; thus defining the extent and position of the western watershed, which abuts on the desert in longitude 120° 20' E. From a depôt established on the Ashburton he proceeded as far as the 23rd parallel. No watercourses proved to flow eastward. From the end of the watershed in the before-mentioned longitude he journeyed along the 24th parallel as far as Rawlinson Range in longitude 127°, the country being all open spinifex sandhill desert. The telegraph line was struck close to Mount O'Halloran, 60 miles from the Peake Station. No natives were met with between Mount Gould and Petermann Range. The winter was excessively cold during the greater portion of the journey.

Correspondence.

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THE BERENDEENS.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—Being engaged in writing the second volume of my work on the Monguls, which deals with the crooked subject of the history of the various Turkish tribes of Central and Western Asia whose chiefs were descended from Jingis Khan, I am brought into contact with some difficult ethnological problems, whose solution is of some importance. Will you allow me to draw attention to a few of them, in the hope that I may receive assistance from some of your numerous subscribers. We will begin with Southern Russia, and attempt to make a survey of its ethnographic conditions before the invasion of Batu Khan. It is popularly supposed that the whole steppe land of Southern Russia, from the Carpathians to the Volga, was then occupied by the people who are called Comans by the Byzantine authors, Poloutsi by the Russians, and Valan by the Germans, and whose Turkish affinities have been put beyond doubt by the researches of a long series of inquirers. But unless the name Coman is used in a generic sense, much wider than it was generally used by contemporary authors, except perhaps by the Hungarians, we must analyse the problem more closely.

It would seem that at least four distinct kinds of Turkish nomades then lived in these steppes. They are thus referred to by Nestor, the father of Russian annalists. He says, speaking of the Poloutsi: "They form four branches, the Torkmeni, the Pechenegs, the Torks, and the Poloutsi," who, he says, "were descended from four of the twelve sons of Ishmael" (*Nestor, ed. Paris*, i., 253-254). Nikon, another Russian chronicler, but who wrote much later, speaks of the same four tribes as the Torkmeni, Pechenegs, Tortozy, and Comani. These passages are interesting on several accounts; in the first place, their mention by Nestor is the first authority known to me for the name Torkmeni or Turkmans. Secondly, beyond the mention of the latter in these two paragraphs, I don't know that they are elsewhere named by any of the early Russian chroniclers. Thirdly, while the name Torkmeni is thus limited in its use, it is strange that a tribe which occurs frequently in the Russian annals in conjunction with the Uzes and Pechenegs, namely, the Berenditches, or Berendeens, is not mentioned in either of these paragraphs, and when we turn to the account of the civil strife between David Igorevitch and Vassilko, in 1097, in which Nestor himself acted as an intermediary, we find him reporting Vassilko as saying that the Berendeens, the Pechenegs, and the Torks, would assist him, and in Karamzin's version of the same event he adds the Poloutsi (*Nestor, ed. Paris*, i., 271; *Karamzin*, ii., 157). From a consideration of these facts, it seems to me more than probable that Torkmeni and Berendeen were synonyms for the same people.

The name Berendeen has been derived by Von Hammer, and his view seems to be generally held, from the town of Berdaa, or Berditch, in Northern Armenia, and he argues that the Berendeens were a body of nomades, from that town, in the Russian service. We know that

it was then the custom to employ mercenary troops in this way. Until the eleventh century, the Russian princes had a body of Varanjians in their pay. The Armenian princes similarly kept a body of Turkish Kipchaks, so did the Khazars a body of mercenaries called Alars, and it was the fashion for nearly all the small Arab dynasties, in Western Asia, to do the same; and in many cases they were supplanted by these irregular troops, like the Egyptian sovereigns were by the Mameluke dynasties; and it may very well be that a body of Turkomans from Berdaa similarly took service with the Russian princes. Von Hammer dates the first appearance of the Berendeens in Russian history in 993-995 (*Golden Horde*, 444), but this is clearly a century too early. We do not find any mention of them in the contemporary annals of Nestor and his continuators, nor in the pages of the very diligent Karamzin till 1097, nor does Von Hammer cite a single occurrence of the name between 995 and 1097, and it is perfectly clear that he has mistaken the date by a century. Their first mention in Nestor is in the passage already cited in 1097. In 1120, we are told, the Torks and Berendeens abandoned Russia (that is, abandoned the grand principality of Kief, to which the name Russia was limited by Nestor), and after making several demonstrations they were completely dispersed (*Nestor, op. cit.*, ii., 3-4). In 1138 the Grand Prince Yaropolk marched against the Princes of Chernigof with an army of 30,000 men, which we are told consisted of the men of Rostof, Poloskof, Smolensk, Kief, Pereislavl, Vladimir, Tourof, and Galitch, of Ughres, *i.e.*, Hungarians, and *Berendeens* (*Nestor, op. cit.*, ii., 24).

Ten years later, when Isiaslaf, the son of Mitislaf of Pereislavl, marched against the Grand Prince Igor Olgavitch, whom he displaced, a body of Berendeens accompanied him (*id.*, ii., 41).

In 1148 Isiaslaf marched against Gleb Georgievitch, and, we are again told, he was joined by a body of Berendeens (*id.*, ii., 5). The next year some of the intriguing grandees at his court sowed dissension between Isiaslaf and Bolislaf Georgievitch, by suggesting that the latter had tampered with and gained over to his side the people of Kief and the Berendeens.

In the fight on the 28th of August, 1149, between Isiaslaf and George Vladimirovitch, in which the former was defeated and for a time displaced by his rival, the Berendeens were the first to fly (*Karamzin*, ii., 294).

The next year Isiaslaf was again seated on the throne, but still in conflict with his rival George, and, we are told, Mitislaf, the son of Isiaslaf, went to his father's help with a band of Berendeens, and they fought on his side in the battle which ensued with George's ally, Vladimirko. On seeing the numerous forces of the latter, they addressed Isiaslaf, saying: "Prince, let us retire, and not venture to cross the river, for his forces are too great and ours too small." He replied, "It is better, *brothers*, that we should die here than suffer such a disgrace." But presently the people of Kief joined the Berendeens in their protest, and eventually left him with them, upon which he said: "I shall have to march against the enemy with strangers only, with the Ughres and the Lekes, *i.e.*, the Hungarians and Poles, for my people have deserted me" (*Nestor, op. cit.*, ii., 64). This shows the Berendeens were treated as their subjects by the grand princes. A short time later the Berendeens are again found mentioned with the people of Kief as assisting Isiaslaf.

In 1151 we read of the Berendeens again helping Isiaslaf against his great rival, George, the son of Vladimir. On this occasion their name is qualified as "the Berendeens with the rude carriages" (*Nestor*, ii., 70). In the fitful struggle between the two rivals we find that later in the same year a troop of Berendeens marched under the banners of Isiaslaf against George, who was then at Pereislavl; and the next year, namely, in 1152, Isiaslaf, at the head of the Berendeens, is mentioned as having marched against Vladimirko, Prince of Gallicia. Later in the year Isiaslaf sent his son, Mitislaf, with the Berendeens, Torks, and Pechenegs, against the Poloutsi, he himself marching upon Novgorod (*id.* 76).

In 1155, George, the son of Vladimir, being again Grand Prince, the Poloutsi appeared before Kanef, and on George marching against them, they demanded that he would release such of their countrymen and of the Berendeens as they had made prisoners. The Berendeens, we are told, did not make this request for themselves. They said: "We pass our lives amidst dangers, and abandon our bodies willingly to Russia" (*id.*, ii., 89).

Karamzin has a different version of this story, which is more probable, and perhaps derived from another manuscript. He tells us how the Poloutsi were defeated by the Berendeens, who captured many prisoners from them. The Grand Prince George asked that they would set them at liberty, but they declined, saying: "We shed our blood for the Russians, and our prisoners are our own" (*op. cit.*, ii., 344).

In 1158, Isiaslaf Davidovitch, Grand Prince of Kief, defeated the Prince of Gallicia with a large army, in which there were 20,000 Poloutsi, but he was treacherously deserted by the Berendeens and Torks, who addressed the latter, saying: "Prince, everything depends upon us! If you will be our friend like your father was, and give each of us a good town, we will abandon Isiaslaf." They accordingly fired their tents, and created a panic in the Grand Prince's army. The Poloutsi fled, and many of them were drowned in crossing the River Ross, and others were captured by the Berendeens (*Karamzin*, ii., 359-360).

Driven away from home, Isiaslaf sought assistance from some vagabonds in Moldavia, who lived in the town of Berlad and also from the Poloutsi, and with the latter proceeded to attack Chernigof. The people of Kief and the Berendeens assisted in its defence (*id.*, ii., 366). In this campaign apparently there took place the fight mentioned by Von Hammer, in 1159, when he tells us the Poloutsi were defeated by the Berenditches at Oblazi.

In 1161 or 1162, Isiaslaf was again assisted by the Poloutsi, attacked Kief, and forced the Berendeens and people of Kief to abandon the town; the Grand Prince Rotislaf, his rival, at the same time found refuge at Bielgorod, where he was besieged by Isiaslaf. Meanwhile, however, the Torks, the Berendeens, the Pechenegs of the Ross, and the people of Gallicia came to the rescue, and Isiaslaf fled and was killed in his flight (*id.*, ii., 370-371).

In 1170, Gleb, the Prince of Kief, wished to march against the Poloutsi, who had made a raid upon the Dnieper. The Berendeens, however, opposed this, and advised him to join with his brother, and to march at the head of their united troops against them, but meanwhile urged him to send one of his brothers at the head of some Berendeens as an advanced guard. He accordingly ordered his brother, Mikhail, at the head of a hundred men from Pereislavl and 1500 Berendeens, to pursue the enemy. The latter cut off the retreat of the Poloutsi, and having surrounded their advanced guard, which was 300 strong, they captured some of them and killed others. They learnt from the prisoners they had taken that the remaining force of the Poloutsi was 6000 strong. In order that their prisoners might not rejoin this main body and turn upon them, they put them all to the sword without sparing one. In the fierce struggle which followed, the Berendeens insisted upon fighting in the front rank, and would not let Mikhail expose himself, telling him he was their wall and protector. The Poloutsi were beaten, and Mikhail, at the head of the men of Pereislavl and of the Berendeens, returned once more to Kief (*Nestor, op. cit.*, ii., 114-116).

In 1171, Mikhail again defeated the Poloutsi, and was assisted by the Berendeens and Torks (*id.*, 117). Mikhail on these occasions was fighting as the henchman of his brother Gleb, the Prince of Kief, who was the rival of Mitislaf; the former was generally supported by

the Berendeens and Torks, while the latter had the people of Kief on his side (*Karamzin*, 3-6).

The Berendeens and Torks assisted at the siege of Vouychégorod, in 1174, when it was attacked by the forces of the Grand Prince Andrew (*id.*, iii., 23).

In 1176, Roman, Prince of Smolensk, who had usurped the throne of Kief, was betrayed by the Berendeens (*id.*, iii., 50). Tatischef mentions that this year the Poloutsi made an incursion upon the Dnieper, and captured six towns of the Berendeens (*Von Hammer, Golden Horde*, 454), but this is not mentioned by either Nestor or Karamzin, and it is exceedingly improbable that the Berendeens had any towns on the Dnieper. Von Hammer has similarly dated an occurrence of the Berendeens in 1180 (*id.*), which really happened in 1155. He names George Dolgoruki as its hero, although that prince died in 1157.

The Berendeens are mentioned for the last time in the pages of Nestor and his continuators in 1185, when 2000 Berendeens and men of Pereislavl are named as having accompanied Vladimir Glebovitch against the Poloutsi, and taken part in the great victory which the Russians gained over them in that year (*Nestor*, ii., 152).

During the eight years between 1185 and 1193, the Poloutsi carried on an intermittent war against the Russians. In these fights, Rolislaf, the son of Rurik, greatly distinguished himself, and was the dread of the barbarians; he led the Torks and Berendeens, who, we are told, sometimes acted as a rampart to the people of Kief, and at others betrayed them. One of their petty princes named Kuntudvi, having been insulted by Sviatosaf, went over to the enemy, and ravaged with them the villages on the Dnieper. To conciliate him he was given the little town of Dveren, on the Ross (*Karamzin*, iii., 81-82).

In 1193, Rurik, the Prince of Kief, was entertained by his brother David at a feast, and we are told that the Torks, Berendeens and monks (a curious medley surely) were admitted to his table (*id.*, 108).

In 1202, the Berendeens and Torks assisted Roman, the Prince of Volhynia, against the Prince of Kief and his allies (*id.*, 127).

In 1206, Rurik regained the throne of Kief, and returned with his sons and all his Turkish allies, namely, the Berendeens, Poloutsi, Skowi and Boyuts (*Von Hammer*, 457).

This is apparently the last mention of the Berendeens in Russian history. I have ransacked the various authorities accessible to me to find notices of them, and it will be at once granted that these notices unanimously prove that the Berendeens were mercenaries in the pay of the Russian princes. I believe further as I have said, that they were Turkomans from Berdaa, in Armenia. Any further facts about them would be very welcome. In the next letter I shall have something to say about the Poloutsi or Comans.

Yours, &c.,
HENRY H. HOWORTH.

Derby House, Eccles.

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MAPS OF THE AFRICAN LAKES.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In a note accompanying a map illustrative of Stanley's discoveries, and published in the September number of the *Geographical Magazine*, I said that I adhered to my former delineation of the western shore of the Ukerewe Nyanza, in spite of a map prepared by Mr. Turner for the *Proceedings of the Royal Geographical Society*. I also said that the bearings given in Colonel Grant's printed accounts are not borne out by this map. I say so still. Colonel Grant tells us that Luchamo is 12 miles from the lake; on the map the distance is 17 miles; from Kyabogo to Sasse Island, we are told the distance is 5 miles; on the map it is 11 miles. At Kyabogo, Colonel Grant saw the moon rising above the lake in S. 69° 41′ E. (true), but a line in that direction on Mr. Turner's map carries us right across Sasse Island. At Chango the sea-horizon is said to extend from 85° to 152° (magnetic); on the map it extends only from 100° to 142° (true), but Mr. Turner was fully justified in rejecting these bearings, for they are irreconcilable with others furnished by Colonel Grant himself. These discrepancies, I maintain, fully justify my remarks, but nothing was further from my thoughts than throwing blame upon Mr. Turner. Indeed, I consider it impossible to reconcile Stanley's work satisfactorily with that of his predecessors. I hope Colonel Grant's map will be published in its original state, and I shall then be most happy to avail myself of it.

As regards Mr Turner's theory on the position of Mount Gambaragara, we must leave its settlement to the future. He desires to see the mountain in the vicinity of Usongara, and it appears to him that Stanley started for the Albert Nyanza from near Mtesa's capital, and not direct from Dumo. Stanley's letters contain nothing to confirm these suppositions. As to Beatrice Gulf, Mr. Turner has evidently misunderstood what I said. I lengthened the lake in accordance with the distances given by Gessi, and I suggested that Gessi's Niomba might possibly turn out to be Stanley's *Unyampaka*—in other words, Stanley's Beatrice Gulf and the Estuary of the Missisi may possibly be identical.

20th October. E. G. RAVENSTEIN.

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THE SISTAN MISSION.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—Without entering into any discussion on the merits of the Sistan Arbitration, allow me to take exception to the passage of a review on *Eastern Persia*, in your number for October, which does not, to my mind, indicate the true results obtained. The reviewer says: "The excessively bad conduct of the Persian Commissioner rendered the mission comparatively a failure. So far as settling the disputed question of the right to the province of Sistan is concerned, no conclusion was arrived at." As regards the question of *right*, I am of opinion that the whole case has been fairly stated, and that even in the matter of detail there is little, if anything, more to be ascertained to draw a just conclusion. A mission, the object of which was gained, can hardly be called a "failure;" nor was I aware, until reading the review under notice, that such was the impression on the minds of those who understood the nature of the work performed.

Your obedient servant,
F. J. GOLDSMID.

NOTICE.

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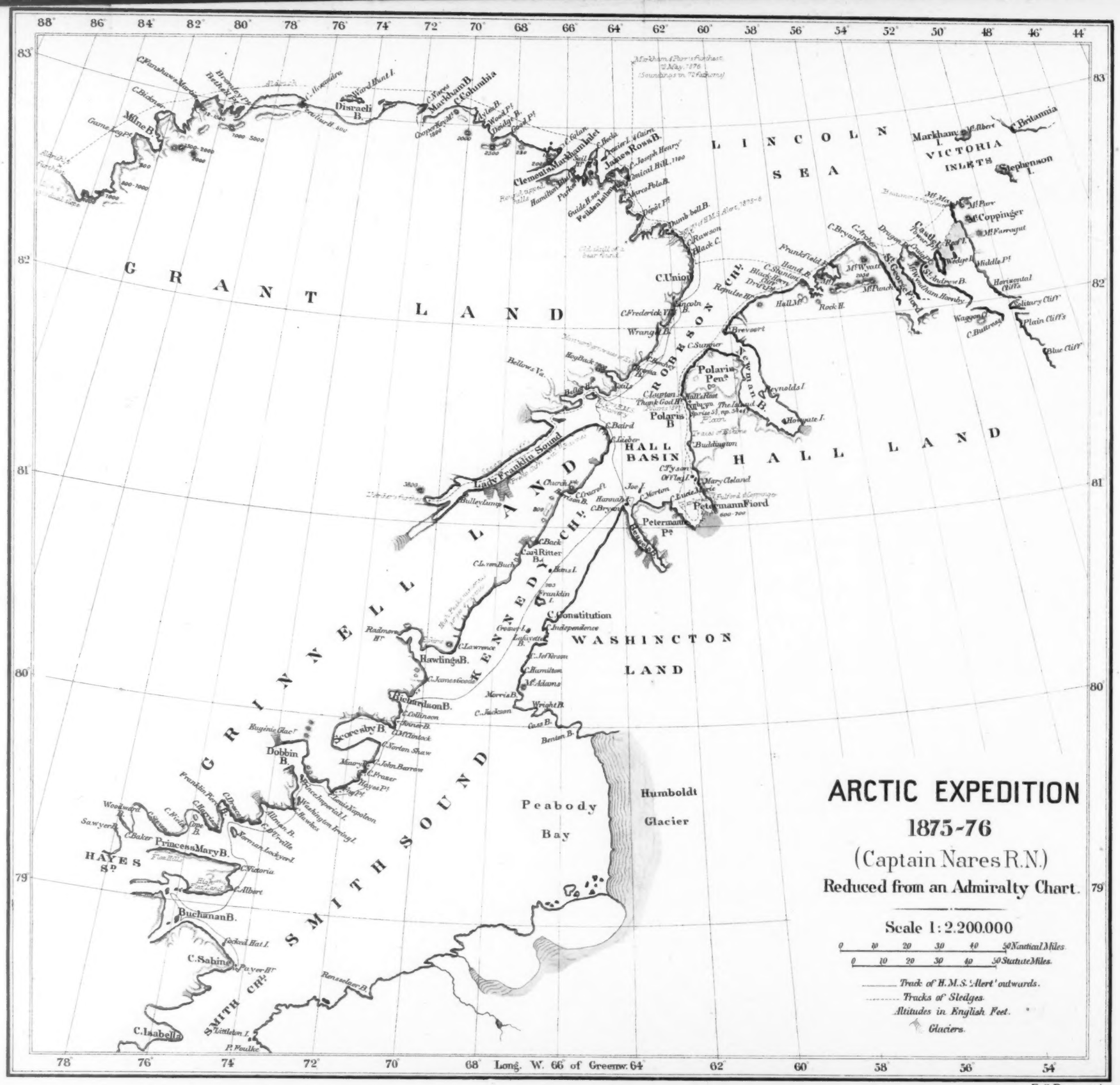
ARCTIC EXPEDITION
1875-76
(Captain Nares R.N.)
Reduced from an Admiralty Chart.
Scale 1: 2.200.000
0 10 20 30 40 50 Nautical Miles
0 10 20 30 40 50 Statute Miles.
Track of H.M.S. 'Alert' outwards.
Tracks of Sledges.
Altitudes in English Feet.
Glaciers.
LINCOLN SEA
GRANT LAND
HALL LAND
WASHINCTON LAND
GRINNELL LAND
KENNEDY CH.
ROBESON CH.
SMITH SOUND
HALL BASIN
LADY FRANKLIN SOUND
PETERMANN FIORD
HUMBOLDT GLACIER
PEABODY BAY
MARKHAM & VICTORIA INLETS
HAYES SD.
SMITH CH.
Long. W. 66 of Greenw. 64
E.G. Ravenstein.